

Financial Constraints and Investment Decisions of Sharia MSMEs in Indonesia: The Mediating Role of Cash Holding

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Abstract

Access to external financing remains one of the most critical challenges limiting the investment capacity of micro, small, and medium enterprises (MSMEs), particularly those operating under Sharia principles. While prior studies have extensively examined the relationship between financial constraints and investment decisions in large firms, limited attention has been given to the internal financial mechanisms that enable Sharia-compliant MSMEs to cope with such constraints. This study addresses this gap by examining the role of cash holding as a mediating mechanism linking financial constraints and investment decisions among Sharia MSMEs in Indonesia. Data were collected through a structured survey of 200 MSME owners or managers and analyzed using Structural Equation Modeling–Partial Least Squares (SEM-PLS), with mediation effects assessed through bootstrapping procedures. The results reveal that financial constraints exert a significant negative effect on investment decisions ($\beta = -0.938$, $p < 0.01$), while simultaneously increasing cash holding ($\beta = 0.347$, $p < 0.01$). Cash holding, in turn, positively influences investment decisions ($\beta = 0.643$, $p < 0.01$) and significantly mediates the relationship between financial constraints and investment behavior ($\beta = 0.325$, $p < 0.01$). The structural model demonstrates strong explanatory power, with R^2 values of 0.932 for cash holding and 0.828 for investment decisions. These findings suggest that cash holding functions as a financial buffering mechanism that partially mitigates the adverse impact of financing constraints on MSME investment activity. By integrating financial constraints, internal liquidity management, and investment behavior within a single analytical framework, this study extends entrepreneurial finance research into the domain of Islamic MSME finance and provides practical insights for policymakers and Islamic financial institutions seeking to improve access to Sharia-compliant financing and support sustainable MSME investment.

Keywords:

Cash holding; Financial constraints; Investment decision; Sharia MSMEs.

1. INTRODUCTION

A number of studies in the last ten years have examined the relationship between financial constraints, cash holdings, and investment decisions, particularly in large companies and public companies in both developed and developing countries (Ahmad et al., 2023; Feng et al., 2022; Gupta & Mahakud, 2023; Ilyas & Abbas, 2025; Wu et al., 2025). Recent studies show that firms facing financial constraints tend to have higher levels of cash holdings and exhibit greater sensitivity of investment to internal cash flows, indicating the important role of cash as an internal mechanism in financing investment (AbdulKarim & Monday, 2025; Gupta & Mahakud, 2023; Sreenivasulu & Mamilla, 2024; X. Wang, 2022; Wijerathna et al., 2024; Zhang, 2025). However, these studies mostly focus on large companies or public companies, so that the empirical findings cannot yet be fully generalized to the context of MSMEs, especially Sharia MSMEs which have

different funding characteristics and financial behavior (Bukalska & Maziarczyk, 2023; Nurfadilah et al., 2025). Existing research on MSMEs generally places financial constraints as a direct determinant of investment decisions or business performance, without examining the internal mechanisms that bridge this relationship (Doruk, 2025; Nasrulloh et al., 2024).

Furthermore, studies on cash holding in MSMEs are still relatively limited and tend to position cash holding as a dependent variable influenced by external factors, rather than as a mediating variable that explains how financial constraints influence investment decisions (Bukalska & Maziarczyk, 2023). In the context of Islamic MSMEs, empirical studies that integrate financial constraints, cash holding, and investment decisions in a single, complete analytical framework are still very rare, even though the characteristics of Islamic financing theoretically have the potential to strengthen the role of cash as an internal mechanism for investment financing (Doruk, 2025; Financial Services Authority, 2023).

Based on the review, the research gap in this study lies in the lack of empirical evidence explicitly testing the role of cash holdings as a mediating variable in the relationship between financial constraints and investment decisions in Sharia-compliant MSMEs. Furthermore, most previous studies have not simultaneously integrated entrepreneurial finance and Islamic finance approaches to explain the investment behavior of Sharia-compliant MSMEs, resulting in a partial understanding of the internal financial mechanisms of Sharia-compliant MSMEs (Bukalska & Maziarczyk, 2023; Nurfadilah et al., 2025). Thus, the novelty of this research lies in the development and testing of an empirical model that positions cash holding as an internal mechanism that bridges the influence of financial constraints on investment decisions of Sharia MSMEs, using a business actor perception approach through a questionnaire tailored to the characteristics of Sharia MSMEs. This approach is expected to broaden the validation of financial theory, particularly regarding pecking order and precautionary behavior, in the context of Sharia MSMEs in developing countries (Doruk, 2025; Sun et al., 2023).

MSMEs have a strategic role in supporting the national economy through their contribution to job creation, income equality, and economic stability, but the sustainability of MSME growth is highly dependent on the ability of business actors to make appropriate and sustainable investment decisions (Organisation for Economic Co-operation and Development, 2023). In the context of Islamic economics, Islamic MSMEs have special characteristics because their business activities must be in line with Islamic financial principles, which implicitly form different funding patterns, liquidity management, and investment behavior compared to conventional MSMEs (Financial Services Authority, 2023). The main problem faced by Sharia MSMEs in the field is limited access to external financing that is in accordance with Sharia principles, both in terms of the availability of financing products, administrative requirements, and the reach of Sharia financial institutions, so that many Sharia MSME actors experience difficulties in realizing productive investments (Financial Services Authority, 2023; Nurfadilah et al., 2025). This condition causes most Sharia MSMEs to rely on internal funds as the main source of business financing, which ultimately limits the scale and speed of business development Aminia et al., 2021; Islam et al., 2020; Quarshie et al., 2025).

These problems indicate the existence of financial constraints, namely the limited ability of companies to obtain external funding to support their investment activities, which in financial literature has been shown to have a significant impact on investment decisions, especially in small and medium-sized companies (Doruk, 2025; Gupta & Mahakud, 2023). In Islamic MSMEs, financial constraints are not only influenced by business size and information asymmetry, but also by institutional preferences and limitations inherent in the Islamic financing system, thereby strengthening the funding pressures faced by business actors (Financial Services Authority, 2023). In response to these external funding limitations, Sharia MSMEs tend to increase internal cash holdings as an alternative source of financing and liquidity buffer, which is reflected in relatively high cash holding practices Ahmad et al., 2021; Ahmed & Hussain, 2024; Bagh et al., 2021; Hussain et al., 2023; Khan et al., 2021; Subhani et al., 2025). However, although cash holdings can increase financial flexibility, excessive reliance on internal cash also has the potential to lead to conservative investment behavior, especially when business uncertainty increases, so that investment decisions do not fully reflect available growth opportunities (Chiu et al., 2022; Doruk, 2025; Guizani & Ajmi, 2021; Sun et al., 2023; X. Wang, 2022).

Financial constraints have long been recognized as one of the primary barriers affecting firms' investment decisions, particularly for small and medium-sized enterprises (SMEs). In the corporate finance literature, financial constraints refer to the limitations firms face in accessing external financing due to high borrowing costs, limited collateral, or asymmetric information between lenders and borrowers. Firms experiencing financial constraints tend to rely more heavily on internal financing sources, such as retained earnings or internal cash reserves, to support investment activities (Diaw, 2021; Hastutik et al., 2022). As a result, firms often increase their cash holdings as a precautionary measure to maintain liquidity and ensure the availability of funds for future investment opportunities. While the relationship between financial constraints and investment has been extensively studied in conventional corporate finance, the dynamics may differ in the context of Sharia-compliant enterprises. Sharia MSMEs operate under Islamic financial principles that prohibit interest-based transactions (*riba*), excessive uncertainty (*gharar*), and speculative activities (*maysir*). Consequently, these enterprises rely on alternative financing mechanisms that comply

with Islamic law, such as profit-and-loss sharing contracts (e.g., *mudharabah* and *musyarakah*) and trade-based financing instruments (e.g., *murabahah*) (Hassan et al., 2025; Lawhaishy & Othman, 2023). Although these instruments provide ethical and risk-sharing financial solutions, their availability and accessibility are often limited, particularly for small businesses operating in developing economies.

Recent studies suggest that Sharia MSMEs frequently experience additional financial constraints due to structural challenges in the Islamic financial ecosystem. These challenges include limited availability of Sharia-compliant financing institutions, insufficient financial literacy among MSME owners, and stricter collateral requirements imposed by financial institutions (Chaudhry et al., 2024; Hassan et al., 2025). In many cases, these limitations lead Sharia MSMEs to rely primarily on internal funds to sustain their business operations and investment activities. Consequently, the role of internal liquidity, particularly cash holding, becomes crucial in supporting business continuity and investment capacity. From a corporate finance perspective, firms maintain cash reserves for several motives, including transaction, precautionary, and speculative motives. Among these, the precautionary motive is particularly relevant for financially constrained firms. Firms facing uncertainty in accessing external financing tend to accumulate cash reserves to safeguard their investment opportunities during periods of financial distress (Dao et al., 2023). In the context of Sharia MSMEs, precautionary cash holding becomes even more important because these enterprises must ensure that their financial activities comply with Islamic principles while maintaining sufficient liquidity to support operational and investment needs.

Moreover, Islamic economic principles emphasize the productive use of financial resources and discourage the accumulation of idle wealth. Islamic finance promotes financial practices that support economic justice, transparency, and risk-sharing among economic agents. Therefore, cash management in Sharia-compliant firms should aim not only to maintain liquidity but also to facilitate productive investment activities that contribute to economic development and social welfare (Butt et al., 2023). In this regard, cash holding can function as an internal financing mechanism that enables Sharia MSMEs to overcome financial constraints while maintaining compliance with Islamic financial principles. Empirical evidence also indicates that firms facing financial constraints are more likely to increase their cash holdings to ensure the availability of internal funds for future investments (Hidayat et al., 2021). However, this relationship may be more pronounced in Sharia MSMEs, where access to conventional credit markets is restricted and Islamic financing instruments are not always widely available. As a result, cash holdings can play a mediating role in the relationship between financial constraints and investment decisions by providing internal financial flexibility that enables firms to undertake investment projects despite limited external financing.

Given the strategic importance of MSMEs in emerging economies such as Indonesia, understanding the financial behavior of Sharia MSMEs is particularly relevant. Indonesia has a rapidly growing Islamic financial sector and a large population of Muslim entrepreneurs, making it an ideal context to examine how Sharia-compliant businesses manage financial constraints and investment decisions. By investigating the mediating role of cash holding in the relationship between financial constraints and investment decisions, this study contributes to the growing literature on Islamic corporate finance and MSME financial management. Specifically, this research extends the conventional corporate finance framework by incorporating the institutional and ethical dimensions of Islamic finance into the analysis of financial constraints and investment behavior among Sharia MSMEs.

Based on the above description, the purpose of this article is to analyze the influence of financial constraints on investment decisions of Islamic MSMEs, examine the influence of financial constraints on cash holdings, and analyze the role of cash holdings as a mediating variable in the relationship between financial constraints and investment decisions of Islamic MSMEs. This research is expected to provide scientific contributions by enriching the literature on Islamic-based entrepreneurial finance and providing practical implications for policymakers and Islamic financial institutions in designing more adaptive financing and liquidity management strategies to encourage investment and sustainable growth of Islamic MSMEs.

2. RESEARCH METHOD

This study was designed using an explanatory research design with the aim of explaining the causal relationship between financial constraints, cash holdings, and investment decisions in Sharia-compliant MSMEs. The approach used was quantitative, as this study focused on hypothesis testing and measuring the relationships between variables based on numerical data obtained from respondents. The research method used was a survey, which is considered appropriate for collecting data on Sharia-compliant MSME actors' perceptions regarding their financial condition and investment decisions within a specific period (Takona, 2024).

The research instrument used was a structured questionnaire compiled based on the following indicators Table 1.

Table 1. Operational Definition of Variables

Variable	Description/Indicator	Data Collection Method	Measurement Scale
Financial Constraints	The financial constraints indicators used are access to external financing, financing costs and requirements, and limited financing alternatives (Halimah & Suryani, 2025).	Questionnaire Survey	Likert Scale (1-5)
Cash Holding	Cash holding indicators include internal cash availability, precautionary motives, and cash as a source of investment funding (Dao <i>et al.</i> , 2023).	Questionnaire Survey	Likert Scale (1-5)
Investment Decisions	Investment decision indicators include productive asset investment, business development investment, and future investment plans (Bindeeba <i>et al.</i> , 2025; Francisco, 2024).	Questionnaire Survey	Likert Scale (1-5)

This instrument was designed to capture business actors' perceptions regarding funding limitations, cash management policies, and business investment realization and plans. The research location included Sharia-compliant MSMEs operating in Indonesia, with a focus on MSMEs operating in accordance with Sharia principles and actively managed by their owners or managers. Data collection was conducted through direct and online questionnaires, depending on respondent accessibility. Respondents were Sharia-compliant MSME owners or managers deemed to have adequate knowledge of their business's financial condition and investment decisions. The sampling technique used purposive sampling, with the primary criteria being that respondents were MSMEs operating Sharia-compliant businesses and having been operating for at least two years. The characteristics of Sharia-compliant MSMEs in this study were examined from several aspects: the products or services owned by the MSMEs were halal and did not conflict with Sharia law; the capital sources used were not interest-bearing loans but rather used personal funds or Sharia financing; transactions were conducted using Sharia contracts; financial management did not calculate interest and did not charge interest; and business values upheld trustworthiness, honesty, and fairness (Islamic business ethics). The number of respondents in this study was 200 Sharia MSMEs, which was considered adequate for Structural Equation Modeling–Partial Least Squares (SEM-PLS) based analysis, considering that this method is relatively tolerant to medium sample sizes and non-normal data distribution (Hair *et al.*, 2021).

This study employed a purposive sampling technique to select respondents who meet specific criteria relevant to the research objectives, namely Sharia-compliant MSMEs operating in Indonesia. This approach was considered appropriate because the research specifically targets firms that implement Islamic financial principles, a population for which a comprehensive sampling frame is often unavailable. While purposive sampling may introduce potential selection bias due to its non-probability nature, it is widely recommended in studies involving specialized populations where respondents must possess specific knowledge or characteristics relevant to the constructs being examined (Rose *et al.*, 2023). In this study, respondents were required to meet several inclusion criteria, including operating a Sharia-compliant business, having at least two years of business experience, and being actively involved in financial management and investment decision-making. These criteria help ensure that the collected data accurately reflects the financial behavior of Sharia MSMEs while reducing the risk of irrelevant responses. Furthermore, the sample size of 200 respondents is considered adequate for Partial Least Squares Structural Equation Modeling (PLS-SEM), which is particularly suitable for exploratory research and complex models involving mediation relationships. According to methodological guidelines, PLS-SEM can produce robust estimates with relatively moderate sample sizes, and the minimum sample size requirement can be determined using the “ten-times rule,” which suggests that the sample should be at least ten times the maximum number of structural paths pointing to a latent construct (Hair *et al.*, 2021). In addition, recent methodological studies emphasize that sample sizes exceeding 150–200 observations generally provide sufficient statistical power for PLS-SEM models with mediation structures (Vaithilingam *et al.*, 2024). Therefore, although purposive sampling inherently limits statistical generalizability, the use of clearly defined selection criteria, adequate sample size, and methodological alignment with PLS-SEM ensures that the sampling approach remains appropriate and

methodologically justified for investigating financial constraints, cash holding, and investment decisions among Sharia MSMEs.

The data analysis technique used SEM-PLS, which was chosen because of its ability to simultaneously test causal relationships and mediating effects between latent variables. Data processing was carried out through the stages of coding questionnaire responses, inputting data into statistical software, and analyzing the measurement model (outer model) and structural model (inner model). Measurement model analysis was used to evaluate construct validity and reliability, while structural model analysis was used to test research hypotheses, including testing direct and indirect effects (mediation). Validity testing was carried out through convergent validity testing by examining outer loading and Average Variance Extracted (AVE) values, while reliability testing was carried out using Cronbach's Alpha and Composite Reliability values. Testing the mediating effect of cash holding was conducted using bootstrapping techniques to assess the significance of indirect effects. Data credibility was maintained through a process of screening respondents according to criteria, completing questionnaires anonymously, and consistency of statement items referring to the constructs being measured. All analysis procedures refer to the general guidelines for SEM-PLS analysis as described in the quantitative research methodology literature (Hair et al., 2021).

To ensure the validity and reliability of the research data, several testing procedures were conducted prior to hypothesis testing. First, the validity test was carried out using convergent validity by examining the outer loading values of each indicator. Indicators with loading values greater than 0.70 were considered valid and capable of representing the constructs measured in the study. In addition, the Average Variance Extracted (AVE) value was also examined to confirm that each construct explains more than 50% of the variance of its indicators. Second, the reliability test was conducted using Cronbach's Alpha and Composite Reliability. A construct was considered reliable when the Cronbach's Alpha and Composite Reliability values exceeded the recommended threshold of 0.70, indicating that the measurement items consistently measure the intended construct. These procedures ensure that the measurement model provides stable and internally consistent results.

Furthermore, to ensure that the regression estimates are unbiased, several classical assumption tests were conducted. The normality test was performed by examining the skewness and kurtosis values of each indicator. Data are considered normally distributed when skewness and kurtosis values are close to zero. In addition, the multicollinearity test was conducted by examining the Variance Inflation Factor (VIF) values. A VIF value below 5 indicates that there is no serious multicollinearity problem among the independent variables. Considering that the data in this study were collected using a single questionnaire from the same respondents, steps were also taken to minimize the potential for common method bias. Procedurally, respondent anonymity and confidentiality were ensured to reduce social desirability bias and evaluation apprehension. In addition, the measurement items for each construct were arranged in different sections of the questionnaire to minimize respondents' tendency to infer causal relationships among variables. Statistically, Harman's single-factor test was conducted, and the results showed that the first factor explained less than 50% of the total variance, indicating that common method bias is unlikely to significantly affect the results of this study. After the measurement model met the requirements of validity, reliability, and classical assumptions, the analysis proceeded to the structural model testing using SEM-PLS, which allows simultaneous examination of direct and indirect relationships among the variables studied.

3. RESULTS AND DISCUSSION

3.1. Results

The results of this study were obtained from field data collected through a structured questionnaire distributed to owners or managers of Sharia MSMEs who met the research criteria. The data analyzed were processed and cleaned of incomplete responses, ensuring that all responses used in the analysis met the data quality requirements for testing the structural model (Hair et al., 2021). Data analysis was conducted using the Structural Equation Modeling–Partial Least Squares (SEM-PLS) approach to test the causal relationship between research variables.

Convergent validity assessment is based on the correlation between item scores/component scores estimated using PLS software. An individual's reflexivity measure is considered high if it correlates more than 0.70 with the construct being measured.

Table 2. Outer Loadings

Item	Financial Constraints	Cash Holding	Investment Decisions
FCX1.1	0,891		
FCX1.2	0,921		
FCX1.3	0,917		
FCX1.4	0,921		
FCX1.5	0,975		
FCX1.6	0,965		
CHM1.1		0,881	
CHM1.2		0,965	
CHM1.3		0,975	
CHM1.4		0,921	
CHM1.5		0,982	
CHM1.6		0,951	
IDY1.1			0,922
IDY1.2			0,914
IDY1.3			0,924
IDY1.4			0,932
IDY1.5			0,912
IDY1.6			0,913

Evaluation of the measurement model (outer model) shows that all indicators of financial constraints, cash holding, and investment decisions have outer loading values above the recommended minimum limit, thus meeting the convergent validity criteria. The outer model value or correlation between several constructs and variables has met convergent validity because it has a loading factor value of > 0.70 .

Validity and reliability criteria can also be seen from the reliability value of a construct and the Average Variance Extracted (AVE) value of each construct. A construct is said to have high reliability if the Composite Reliability value is > 0.70 and the AVE is > 0.50 . The following table presents the Composite Reliability and AVE values for all variables.

Table 3. Construct Reliability and Validity

Variable	Cronbach's Alpha	rho _A	Composite Reliability	Average Variance Extracted (AVE)
Financial Constraints	0,976	0,986	0,937	0,858
Cash Holding	0,984	0,915	0,975	0,753
Investment Decisions	0,966	0,976	0,937	0,865

The table shows that the resulting composite reliability value has a construct value above 0.70 and an AVE value above 0.50. This indicates that the reliability test at the purification stage is considered reliable because it meets the requirements for reliability. This means that the reliability test at the purification stage is considered reliable, so this model can be used for hypothesis testing (Hair et al., 2021).

In addition, the results of the reliability test show that the Cronbach's Alpha and Composite Reliability values for all variables are above the required values, so that the research instrument is declared reliable and consistent in measuring the constructs being studied (Hair et al., 2021). The PLS R-Squares results represent the amount of variance of the construct explained by the model. The following shows the results of the R-Squares calculation table 4.

Table 4. R-Square

	R Square	R Square Adjusted
Cash Holding	0,932	0,902
Investment Decisions	0,828	0,813

This study uses one mediating variable, namely Cash Holding, and one dependent variable, namely Investment Decisions, which are influenced by the Financial Constraints variable. Table 4 shows the R-Square value for the Cash Holding variable of 0.932 and for the Investment Decisions variable of 0.828. This indicates that 93.20% of the Cash Holding variable can be explained by Financial Constraints. Furthermore, 82.80% of the Investment Decisions variable can be explained by both Financial Constraints and Cash Holding.

Smart PLS can estimate parameter estimates or robustness even though the data is normally distributed or not normally distributed. If the kurtosis and skewness values are close to zero, then the data is normally

distributed. If > 1 or < -1 then it indicates not normal (Hair et al., 2021). The following are the results of the Normality test table 5.

Table 5. Normality Test Results

Item	Excess Kurtosis	Skewness
FCX1.1	0,431	0,057
FCX1.2	0,145	0,158
FCX1.3	0,434	0,318
FCX1.4	0,273	0,042
FCX1.5	0,347	0,382
FCX1.6	0,267	0,634
CHM1.1	0,141	0,062
CHM1.2	0,436	0,239
CHM1.3	0,323	0,443
CHM1.4	0,589	0,613
CHM1.5	0,460	0,095
CHM1.6	0,337	0,468
IDY1.1	0,307	0,053
IDY1.2	0,409	0,331
IDY1.3	0,407	0,056
IDY1.4	0,532	0,152
IDY1.5	0,098	0,371
IDY1.6	0,421	0,468

Based on the results of the normality test, the kurtosis and skewness values are close to zero, so the data is normally distributed.

The multicollinearity test aims to ensure that the regression equation generated in smartPLS produces unbiased estimates. The test is performed by examining the VIF (variance inflation factors) values. The following are the results of the multicollinearity test table 6.

Table 6. Multicollinearity Test Results

Item	VIF
FCX1.1	3,570
FCX1.2	4,381
FCX1.3	4,824
FCX1.4	3,962
FCX1.5	3,760
FCX1.6	4,330
CHM1.1	4,643
CHM1.2	3,557
CHM1.3	2,493
CHM1.4	3,836
CHM1.5	3,926
CHM1.6	2,808
IDY1.1	4,970
IDY1.2	3,791
IDY1.3	2,738
IDY1.4	3,202
IDY1.5	3,208
IDY1.6	2,591

Based on the results of the multicollinearity test, the VIF value < 5 means that there is no multicollinearity. Based on the results of the validity, reliability and classical assumption tests, it can be concluded that the data has met the requirements, so that it can be continued to test the hypothesis. The following are the results of the direct influence test table 7.

Table 7. Result For Inner Weights

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ((O/STDEV))	P Values
Financial Constraints (X1) -> Investment Decisions (Y)	-0,938	-0,911	0,235	3,998	0,000*
Financial Constraints (X1) -> Cash Holding (M)	0,347	0,359	0,082	4,244	0,000*
Cash Holding (M) -> Investment Decisions (Y)	0,643	0,629	0,083	7,862	0,000*

*Level of significance 1% ($p < 0,01$), **level of significance 5% ($p < 0,05$), and ***level of significance 10% ($p < 0,10$)

The results of the structural model (inner model) test show that financial constraints negatively influence investment decisions of Sharia MSMEs, as indicated by the negative and statistically significant path coefficient. This finding indicates that the higher the level of funding constraints perceived by Sharia MSMEs, the lower their tendency to implement investment decisions, whether in the form of purchasing productive assets or business development. Furthermore, the test results also show that financial constraints have a positive effect on cash holdings of Sharia MSMEs, as indicated by a positive and significant path coefficient. This finding indicates that Sharia MSMEs facing limited access to external financing tend to increase internal cash holdings as a form of anticipation of uncertainty and limited external funding sources. The analysis results also reveal that cash holdings have a positive effect on investment decisions of Sharia MSMEs. The positive and significant path coefficient indicates that the availability of adequate internal cash increases the ability and courage of Sharia MSMEs to realize investment decisions, whether for the purposes of business expansion, increasing production capacity, or product development. Furthermore, the following are the results of the indirect effect test table 8.

Table 8. Specific Indirect Effect

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ((O/STDEV))	P Values
Financial Constraints (X1) -> Cash Holding (M) -> Investment Decisions (Y)	0,325	0,326	0,109	2,988	0,003*

*Level of significance 1% ($p < 0,01$), **level of significance 5% ($p < 0,05$), and ***level of significance 10% ($p < 0,10$)

The results of the indirect effect test indicate that cash holdings mediate the influence of financial constraints on investment decisions of Islamic MSMEs. The significant indirect effect value indicates that the influence of financial constraints on investment decisions occurs not only directly but also through internal cash management mechanisms. Thus, cash holdings act as an intermediary variable explaining how limited external funding influences investment decisions of Islamic MSMEs. Overall, the results of this study indicate that the proposed research model has adequate predictive ability in explaining investment decisions of Islamic MSMEs, with financial constraints and cash holdings as key interrelated factors in determining business actors' investment behavior.

3.2. Discussion

The finding that financial constraints have a negative influence on investment decisions of Islamic MSMEs is in line with financial literature which states that limited access to external funding is the main obstacle in realizing investment in small and medium enterprises (Bakhtiari et al., 2020; Breunig et al., 2020; Cheratian & Goltabar, 2025b, 2025a; Gupta & Mahakud, 2023; Nareswari et al., 2023). In the context of Sharia MSMEs, these limitations are reinforced by the preference for financing that complies with sharia principles, so that economically viable investment opportunities often cannot be realized due to limited funds (Financial Services Authority, 2023). These results support the view that financing limitations are not only technical, but also structural and institutional in nature in the Islamic financial ecosystem.

A further point that requires careful interpretation concerns the relatively large negative coefficient of financial constraints on investment decisions (-0.938). Although this magnitude may initially appear extreme, several methodological and economic considerations help explain this pattern. First, in PLS-SEM models, path coefficients are estimated using standardized latent variables, meaning that the coefficients reflect the relative strength of relationships rather than direct economic magnitudes. When constructs exhibit high explanatory power as indicated by the relatively large R^2 value for investment decisions (0.828) the resulting standardized coefficients can appear large because the structural model captures a substantial proportion of the variance in the dependent variable. Second, from an economic perspective, the strong

negative relationship reflects the structural vulnerability of Sharia MSMEs to financing constraints. Unlike large corporations that can access diversified capital markets, MSMEs often rely on limited funding channels and therefore experience a disproportionate impact when external financing becomes restricted. This effect may be even more pronounced in the context of Sharia-compliant enterprises, where business owners frequently avoid interest-based financing and must depend on a narrower set of Sharia-compliant financial instruments. Consequently, financial constraints can significantly suppress investment realization, producing a strong negative direct coefficient. At the same time, the positive indirect effect through cash holding indicates the presence of an internal adjustment mechanism. When access to external financing becomes limited, Sharia MSMEs tend to accumulate internal liquidity as a precautionary strategy, consistent with the precautionary motive for holding cash. These internal cash reserves subsequently enable firms to finance investment activities despite external funding limitations. Therefore, the coexistence of a strong negative direct effect and a positive indirect pathway does not represent a statistical anomaly but rather reflects a partial mediation structure, in which financial constraints simultaneously restrict investment directly while also triggering adaptive financial behavior that partially offsets this negative effect through internal liquidity management. This interpretation aligns with the entrepreneurial finance literature, which suggests that financially constrained SMEs often rely on internal cash buffers to sustain investment when external credit markets are difficult to access.

This finding is also consistent with the entrepreneurial finance approach which emphasizes that investment decisions in small businesses are greatly influenced by liquidity conditions and funding limitations, in contrast to large companies which have broader access to capital markets (Doruk, 2025). Thus, the results of this study strengthen the argument that financial constraints are an important determinant that limits the investment capacity of Islamic MSMEs, especially in a business environment full of uncertainty (Babatoundé, 2025; Beck, 2023; Berisha, 2021; Demiri et al., 2025; Dushku, 2025; Ndukaji, 2025; Okello Candiya Bongomin et al., 2024; Yilmazer, 2024; Yilmazer et al., 2025). The positive influence of financial constraints on cash holdings indicates that Islamic MSMEs respond to limited external funding by increasing internal cash holdings. This finding aligns with Pecking Order Theory, which states that companies will prioritize internal funding sources when access to external financing is limited (Abdeljawad & Jaradat, 2025; Gupta & Mahakud, 2023; Hastutik et al., 2022; Pane et al., 2025). In the context of Sharia MSMEs, this preference is even stronger due to the limited financing options that comply with Sharia principles, so that internal cash becomes the most reliable source of funds (Bollaert et al., 2021; Bon & Hartoko, 2022; Dong et al., 2021; Graham, 2022; Shanmuganathan, 2020; D. Wang et al., 2022; X. Wang, 2022; Zubair et al., 2020).

In addition, this finding can also be explained through the precautionary motive, namely the tendency of companies to hold cash as a buffer against liquidity risk and business uncertainty (Sun et al., 2023). Sharia-compliant MSMEs facing financial constraints tend to increase cash reserves to anticipate income fluctuations and sudden funding needs, a rational strategy in a business environment with limited access to funding. The positive influence of cash holdings on investment decisions indicates that internal cash plays a significant role in supporting the realization of Sharia-compliant MSME investments. This finding indicates that cash availability provides financial flexibility, enabling business actors to seize investment opportunities without having to rely on difficult-to-access external financing (Bukalska & Maziarczyk, 2023). In other words, internal cash serves as an investment enabler for Islamic MSMEs, especially when the external financing market is not fully inclusive. This result is in line with previous research which shows that companies with higher levels of cash holding have a greater probability of realizing investments, especially in conditions of limited external funding (Doruk, 2025; Gupta & Mahakud, 2023). However, this study extends these findings by showing that the positive relationship between cash and investment also applies in the context of Islamic MSMEs, which have different funding characteristics compared to conventional companies.

The most important finding in this study is the empirical evidence that cash holdings mediate the influence of financial constraints on investment decisions of Islamic MSMEs. This finding suggests that the impact of financial constraints on investment decisions is not entirely direct but rather occurs through internal cash management mechanisms. These results enrich the literature by demonstrating that cash is not simply a result of funding constraints but also a strategic tool used by Islamic MSMEs to navigate these constraints. From a theoretical perspective, this mediation finding integrates Pecking Order Theory and precautionary motive into a single empirical framework that explains the financial behavior of Islamic MSMEs. Financial constraints encourage increased cash holdings as a precautionary response and prioritize internal funding, while cash holdings subsequently determine the ability of Islamic MSMEs to realize investment decisions. Thus, this study makes a conceptual contribution by positioning cash holdings as a key mechanism bridging funding constraints and investment behavior.

When compared with previous research, the results of this study show consistency with studies that found a positive relationship between financial constraints and cash holding, as well as a positive relationship between cash holding and investment (Bukalska & Maziarczyk, 2023; Sun et al., 2023). However, this study differs from most previous research because it explicitly examines the mediating role of cash holdings in the context of Islamic MSMEs, a relatively understudied area. Thus, this study not only confirms previous findings but also extends them to a more specific context relevant to Islamic economic development.

Practically, the results of this study indicate that strengthening internal cash management is a crucial strategy for Islamic MSMEs in addressing limited external funding. Furthermore, these findings also emphasize the crucial role of Islamic financial institutions and policymakers in expanding access to financing in accordance with Sharia principles, so that MSMEs do not need to hold excessive cash, which could potentially hinder productive investment (Financial Services Authority, 2023). Overall, the results and discussion of this study indicate that investment decisions of Sharia-compliant MSMEs result from a complex interaction between external funding constraints and internal financial management strategies, with cash holdings acting as a key bridging mechanism. These findings provide a strong empirical basis for policy development and further research in Sharia-compliant entrepreneurial finance.

From a policy and practical perspective, the findings of this study provide important insights for Islamic financial institutions and regulators in addressing the financing constraints faced by Sharia-compliant MSMEs. The evidence that financial constraints reduce investment capacity while simultaneously encouraging higher cash holdings indicates that many Islamic MSMEs rely heavily on internal liquidity due to limited access to Sharia-compliant external financing. This situation suggests that the current Islamic financing ecosystem may not yet fully accommodate the financial characteristics and risk profiles of MSMEs. Consequently, Islamic financial institutions need to adopt more inclusive and flexible financing models that better align with the operational realities of small businesses. In particular, greater emphasis should be placed on profit-and-loss sharing contracts such as *mudharabah* and *musyarakah*, which are conceptually well suited for entrepreneurial financing because they distribute risk between financiers and entrepreneurs. However, these contracts remain underutilized in practice due to concerns related to monitoring costs, information asymmetry, and risk management. To overcome these barriers, Islamic financial institutions could integrate digital financial technologies, improved credit assessment models, and data-driven monitoring systems to enhance transparency and reduce the perceived risks associated with partnership-based financing.

In addition to expanding partnership-based financing, Islamic financial institutions may also need to redesign their lending practices by shifting from traditional collateral-based financing toward cash-flow-based financing mechanisms. The findings of this study demonstrate that internal cash reserves play a crucial role in enabling investment decisions among Sharia MSMEs. Therefore, financing schemes that complement rather than substitute internal liquidity could be more effective in supporting MSME investment. For example, Islamic banks could develop hybrid financing structures that combine *murabahah*-based asset financing with revolving working capital facilities linked to business cash flows. Such instruments would allow MSMEs to leverage their internal cash holdings while still accessing external financing for productive investments. This approach would reduce the need for excessive precautionary cash accumulation, thereby encouraging firms to allocate more financial resources toward business expansion and technological upgrading.

Furthermore, the results of this study highlight the need for broader institutional support to strengthen the Islamic financial ecosystem for MSMEs. Policymakers and regulators can play a strategic role by promoting Islamic microfinance programs, credit guarantee schemes, and risk-sharing financing platforms specifically designed for Sharia-compliant MSMEs. Government-backed guarantees could reduce the perceived risk of lending to small businesses and incentivize Islamic financial institutions to expand their financing portfolios in the MSME sector. Additionally, improving financial literacy and awareness of Islamic financial products among MSME owners would help reduce informational barriers that often limit the adoption of Sharia-compliant financing instruments. These policy initiatives could create a more supportive financing environment that enables Islamic MSMEs to rely less on internal cash reserves and more on formal Sharia-compliant financial services. More broadly, these findings also contribute to the growing discussion on Islamic entrepreneurial finance and inclusive economic development. MSMEs represent a critical component of economic growth and employment in many Muslim-majority countries, including Indonesia. However, their growth potential is often constrained by limited access to financing that complies with Islamic principles. By demonstrating that cash holdings serve as a mediating mechanism between financial constraints and investment decisions, this study highlights the importance of developing financing systems that combine risk-sharing principles with practical accessibility for small businesses. Strengthening the link between Islamic finance and MSME development can therefore enhance financial inclusion, promote productive investment, and support sustainable economic growth. In this regard, Islamic financial institutions should position themselves not only as providers of Sharia-compliant financial products but also as strategic partners in the long-term development of the MSME sector.

From a theoretical perspective, the mediation effect identified in this study provides an important contribution to the intersection between corporate finance theory and Islamic entrepreneurial finance. While conventional financial literature generally explains the relationship between financial constraints and investment decisions through frameworks such as Pecking Order Theory and the precautionary motive of cash holding, empirical evidence within the context of Sharia-compliant MSMEs remains relatively limited. The results of this study demonstrate that cash holdings function not merely as a passive outcome of financial constraints but as an active financial management mechanism that enables firms to cope with restricted access to external financing. In this sense, the findings extend Pecking Order Theory by showing that the

preference for internal financing among Sharia MSMEs is not only driven by information asymmetry but also by institutional and religious constraints embedded in the Islamic financial system. At the same time, the mediation role of cash holdings supports the precautionary motive argument, suggesting that firms accumulate internal liquidity to mitigate financing uncertainty and maintain investment capacity. By integrating these theoretical perspectives within the context of Islamic MSMEs, this study contributes to the development of Islamic entrepreneurial finance literature, highlighting how financial behavior in Sharia-compliant enterprises is shaped by both conventional financial mechanisms and the institutional characteristics of Islamic finance systems.

Overall, the findings suggest that improving investment capacity among Sharia MSMEs requires coordinated efforts between financial institutions, regulators, and policymakers. By expanding innovative Sharia-compliant financing mechanisms, improving risk-sharing financial models, and strengthening institutional support systems, the Islamic financial sector can play a pivotal role in reducing financing constraints and fostering a more dynamic and resilient MSME ecosystem.

4. CONCLUSION

This study concludes that financial constraints represent a critical factor shaping the investment behavior of Sharia-compliant MSMEs. The findings demonstrate that limited access to external financing significantly reduces the ability of Sharia MSMEs to undertake productive investment activities. In response to these financing limitations, Sharia MSMEs tend to increase internal cash holdings as an adaptive financial strategy to maintain liquidity and sustain business operations. Furthermore, the results indicate that cash holding plays a significant role in supporting investment decisions by providing internal financial flexibility. The most important contribution of this study is the empirical evidence that cash holding mediates the relationship between financial constraints and investment decisions. This finding suggests that the influence of financial constraints on investment decisions does not occur solely through direct funding limitations but also through internal liquidity management mechanisms. By positioning cash holding as a strategic financial buffer, this study extends the application of Pecking Order Theory and precautionary motive within the context of Sharia-compliant MSMEs. From a practical and policy perspective, these findings highlight the need for Islamic financial institutions and policymakers to strengthen the accessibility and effectiveness of Sharia-compliant financing for MSMEs. Islamic financial institutions may need to redesign their financing strategies by expanding risk-sharing financing schemes such as *mudharabah* and *musyarakah*, improving MSME credit assessment systems, and developing more flexible financing instruments that accommodate the financial characteristics of small businesses. In addition, policymakers can support the development of the Islamic MSME financing ecosystem through credit guarantee programs, Islamic microfinance initiatives, and financial literacy programs aimed at improving MSME access to Sharia-compliant financial services. By improving the accessibility of Islamic financing, MSMEs may reduce excessive reliance on internal cash reserves and allocate more financial resources toward productive investment and business expansion.

Despite its contributions, this study has several limitations that should be acknowledged. First, the study relies on perception-based survey data, which may introduce subjective bias in measuring financial constraints and investment behavior. Second, the use of purposive sampling and the focus on Sharia-compliant MSMEs limit the generalizability of the findings to broader MSME populations. Third, the research design is cross-sectional, which limits the ability to observe dynamic changes in MSME financial behavior over time. Future research can build upon these findings in several directions. First, comparative studies between Sharia MSMEs and conventional MSMEs would provide deeper insights into how Islamic financial principles influence financial behavior and investment decisions. Second, future studies may incorporate moderating variables such as economic uncertainty, financial literacy, or institutional support to better understand the conditions under which financial constraints influence investment behavior. Third, further research could employ longitudinal data or actual financial statement data to capture the dynamic relationship between financial constraints, cash management, and investment decisions over time. Expanding the research scope to different regions or countries would also provide broader insights into the role of Islamic finance in supporting MSME investment and economic development.

Overall, this study contributes to the growing literature on Islamic entrepreneurial finance by demonstrating that internal liquidity management plays a crucial role in enabling Sharia MSMEs to navigate financial constraints and sustain investment activities. Strengthening the link between Islamic financial institutions and MSME financing mechanisms will therefore be essential in promoting financial inclusion, encouraging productive investment, and supporting sustainable economic growth in emerging economies.

REFERENCES

- Abdeljawad, I., & Jaradat, M. N. (2025). Revisiting the pecking order theory: Insights from an emerging market economy. *International Review of Economics*, 72(2), 33. Abdeljawad, I., Jaradat, M.N.

Revisiting the pecking order theory: insights from an emerging market economy. *Int Rev Econ* 72, 33 (2025). <https://doi.org/10.1007/s12232-025-00509-7>

- AbdulKarim, U. F., & Monday, A. (2025). INVESTIGATING THE ROLE OF FINANCIAL FLEXIBILITY IN STRATEGIC INVESTMENT DECISIONS OF LISTED NIGERIAN FIRMS. *International Journal of Management, Accounting and Entrepreneurship Studies*, 1(1), 15–30.
- Ahmad MM, Hunjra AI, Islam F, Zureigat Q (2023), "Does asymmetric information affect firm's financing decisions?". *International Journal of Emerging Markets*, Vol. 18 No. 9 pp. 2718–2734, doi: <https://doi.org/10.1108/IJOEM-01-2021-0086>
- Ahmad, T., Kausar, N., Akram, H. M. N., & Kareem, A. (2023). Degree of Financial Flexibility and its Impact on Investment Activities, Cash Holdings and Firm Performance. (2023). *Sustainable Trends and Business Research*, 1(1), 39-52. <https://doi.org/10.70291/stbr.1.1.2023.5>
- Ahmed A, Hussain A (2024), "Board gender diversity and corporate cash holdings: evidence from Australia". *International Journal of Accounting and Information Management*, Vol. 32 No. 4 pp. 622–650, doi: <https://doi.org/10.1108/IJAIM-10-2023-0256>
- Aminia, N., Setionob, B., Pangaribuanc, C. H., & Princesd, E. (2021). The Impact of Cash Management Practices toward Financial Performance of Small and Medium Enterprises in Indonesia. *Social Studies*, 1(1), 35–47.
- Andersson, M., Eklund, J.E. & Tsvetkova, A. Spatial variations in financial constraints of SMEs—evidence from firm-level estimates of investment-cash flow sensitivities in Sweden. *Small Bus Econ* 60, 1683–1698 (2023). <https://doi.org/10.1007/s11187-022-00673-y>
- Babatoundé AL (2025), "Entrepreneurs and SMEs financing in developing countries: do non-financial services improve access to finance?". *Journal of Financial Economic Policy*, Vol. 17 No. 2 pp. 180–198, doi: <https://doi.org/10.1108/JFEP-02-2024-0046>
- Bagh, T., Khan, M. A., Meyer, N., Sadiq, R., & Kot, S. (2021). Determinants of corporate cash holdings among Asia's emerging and frontier markets: Empirical evidence from non-financial sector. <https://doi.org/10.13106/jafeb.2021.vol8.no6.0661>
- Bakhtiari, S., Breunig, R., Magnani, L. and Zhang, J. (2020), Financial Constraints and Small and Medium Enterprises: A Review*. *Econ Rec*, 96: 506-523. <https://doi.org/10.1111/1475-4932.12560>
- Beck, T. (2023). Access to finance: adaptability and resilience during a global pandemic. *Accounting and Business Research*, 53(5), 565–579. <https://doi.org/10.1080/00014788.2023.2219153>
- Berisha, G. (2021). A Leap of Faith and Luck. An empirical investigation how the financial inclusion and coping strategies of Kosovo's SMEs are scaling up the local development.
- Bindeeba, D., Tukamushaba, E. & Bakashaba, R. Toward a holistic model of sustainable investment decision-making in SMEs: a structural approach in a developing economy. *Futur Bus J* 11, 176 (2025). <https://doi.org/10.1186/s43093-025-00598-4>
- Bollaert, H., Lopez-de-Silanes, F., & Schwienbacher, A. (2021). Fintech and access to finance. *Journal of Corporate Finance*, 68, 101941. <https://doi.org/10.1016/j.jcorpfin.2021.101941>
- Bon, S. F., & Hartoko, S. (2022). The Effect of Dividend Policy, Investment Decision, Leverage, Profitability, and Firm Size on Firm Value. (2022). *European Journal of Business and Management Research*, 7(3), 7-13. <https://doi.org/10.24018/ejbmr.2022.7.3.1405>
- Breunig, R., Hourani, D., Bakhtiari, S., & Magnani, E. (2020). Do financial constraints affect the composition of workers of a firm? *Australian Journal of Labour Economics*, 23(1), 79–97. <https://search.informit.org/doi/10.3316/informit.315623918769102>
- Bukalska, E., & Maziarczyk, A. (2023). Impact of financial constraints and financial distress on cash holdings. *International Journal of Management and Economics*, 59(1), 13–31. <https://doi.org/10.2478/ijme-2022-0032>

- Butt HA, Sadaqat M, Shear F (2023), "Does Islamic financial development foster economic growth? International evidence". *Journal of Islamic Accounting and Business Research*, Vol. 14 No. 6 pp. 1013–1029, doi: <https://doi.org/10.1108/JIABR-10-2022-0267>
- Chaudhry IS, Yusop Z, Habibullah MS (2024), "Dynamic common correlated effects of financial inclusion on economic growth: empirical evidence from Organization of Islamic Cooperation (OIC) countries". *International Journal of Emerging Markets*, Vol. 19 No. 10 pp. 3088–3110, doi: <https://doi.org/10.1108/IJOEM-11-2021-1751>
- Cheratian, I. & Goltabar, S. (2025). Decoding the nexus: Finance availability and firm growth in the wake of COVID-19. *Development Policy Review*, 43, e70016. <https://doi.org/10.1111/dpr.70016>
- Cheratian, I., & Goltabar, S. (2025a). Beyond Sanctions: Unpacking growth generators for Iranian small business. *Journal of Policy Modeling*. <https://doi.org/10.1016/j.jpolmod.2025.07.004>
- Cheratian, Iman and Goltabar, Saleh, Finance-Growth Nexus in Time of COVID-19 Lockdown: Case of Iranian MSMEs (December 1, 2023). Available at SSRN: <https://ssrn.com/abstract=4674000> or <http://dx.doi.org/10.2139/ssrn.4674000>
- Chiu, C.-J., Ho, A. Y.-F., & Tsai, L.-F. (2022). Effects of financial constraints and managerial overconfidence on investment-cash flow sensitivity. *International Review of Economics & Finance*, 82, 135–155. <https://doi.org/10.1016/j.iref.2022.06.008>
- Dao, N. T. T., Guney, Y., & Hudson, R. (2023). Managerial overconfidence and corporate cash holdings: Evidence from primary and secondary data. *Research in International Business and Finance*, 65, 101943. <https://doi.org/10.1016/j.ribaf.2023.101943>
- Demiri, F. K., McArdle, J., Tschakert, N., Tmava, Q., Durguti, E., & Sherifi, A. (2025). Unlocking the path to funding: A comparative analysis of factors influencing bank loan access for small and medium enterprises from an entrepreneurial perspective. *Multidisciplinary Science Journal*, 7(12), 2025592–2025592.
- Diaw, A. (2021). Corporate cash holdings in emerging markets. *Borsa Istanbul Review*, 21(2), 139–148. <https://doi.org/10.1016/j.bir.2020.09.005>
- Dong, J. Q., Karhade, P. P., Rai, A., & Xu, S. X. (2021). How Firms Make Information Technology Investment Decisions: Toward a Behavioral Agency Theory. *Journal of Management Information Systems*, 38(1), 29–58. <https://doi.org/10.1080/07421222.2021.1870382>
- Doruk ÖT (2025), "The investment-cash flow sensitivity and the financing constraints hypothesis for emerging markets: a bibliometric and systematic literature review". *Journal of Business and Socio-economic Development*, Vol. 5 No. 2 pp. 122–138, doi: <https://doi.org/10.1108/JBSED-10-2023-0085>
- Dushku, E. (2025). Access to Finance for SMEs in Albania under Monetary Tightening. Economics Section, The Graduate Institute of International Studies.
- Feng, C. B., Mirza, S. S., Ahsan, T., & Gull, A. A. (2022). The impact of financial flexibility and directors' academic experience on corporate R&D investments: a quantile regression approach. *Applied Economics*, 54(17), 1974–1988. <https://doi.org/10.1080/00036846.2021.1983145>
- Francisco, P. M. (2024). A survey of corporate finance practices in micro-enterprises: an exploratory analysis conditional on firm and manager characteristics. *Cogent Business & Management*, 11(1). <https://doi.org/10.1080/23311975.2024.2429791>
- GRAHAM, J.R. (2022), Presidential Address: Corporate Finance and Reality. *The Journal of Finance*, 77: 1975-2049. <https://doi.org/10.1111/jofi.13161>
- Guizani M, Ajmi AN (2021), "Financial conditions, financial constraints and investment-cash flow sensitivity: evidence from Saudi Arabia". *Journal of Economic and Administrative Sciences*, Vol. 37 No. 4 pp. 763–784, doi: <https://doi.org/10.1108/JEAS-12-2019-0132>

- Gupta G, Mahakud J (2023), "Impact of financial distress on investment-cash flow sensitivity: evidence from emerging economy". *International Journal of Managerial Finance*, Vol. 19 No. 4 pp. 713–743, doi: <https://doi.org/10.1108/IJMF-03-2022-0102>
- Hair, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., Danks, N. P., & Ray, S. (2021). *Partial Least Squares Structural Equation Modeling (PLS-SEM) Using R: A Workbook*. Springer International Publishing. <https://doi.org/10.1007/978-3-030-80519-7>
- Halimah, S., & Suryani, E. (2025). The Impact of Digital Finance, Financial Constraints, and Risk Perception of Digital Financial Services on SME Performance: An Empirical Study of SMEs in the Creative Economy Sector on Lombok Island. *Journal of Finance and Business Digital*, 4(1), 189–200. <https://doi.org/10.55927/jfbd.v4i1.59>
- Hassan, K., Muneeza, A., & Hasan, R. (2025). *Islamic finance and sustainable development*. Springer.
- Hastutik, S., Soetjipto, B. E., Wadoyo, C., & Winarno, A. (2022). Trade-Off and Pecking Order Theory of Capital Structure in Indonesia: Systematic Literature Review. *Journal of Positive School Psychology*, 6(5).
- Hidayat, S.E., Izharivan, Y., Sari, C.A. (2021). Islamic Finance and Sustainable Economy: A New Model of Islamic Financial Ecosystem. In: Hassan, M.K., Saraç, M., Khan, A. (eds) *Islamic Finance and Sustainable Development*. Palgrave Macmillan, Cham. https://doi.org/10.1007/978-3-030-76016-8_11
- Hussain, A., Gavurova, B., Ahmed, M., Khan, M. A., & Popp, J. (2023). What Matters for Corporate Cash Holdings Board Governance, Financial Constraints, or Interactions? *SAGE Open*, 13(4), <https://doi.org/10.1177/21582440231210618>.
- Ilyas, M. J., & Abbas, M. (2025). How does Financial Flexibility and Corporate Governance affect Firm Performance in Developed and Developing Countries?. *Pakistan Journal of Social Sciences*, 45(1), 13-26. <https://doi.org/10.5281/zenodo.14886294>
- Islam, A., Mansoor, A., Rahman, M., & Abd Wahab, S. (2020). Adjusting a strategic Cash-Flow model for Bangladeshi small and medium enterprises: The art of surviving COVID-19 emergency. *Business Excellence and Management*, 10(5), 194–213.
- Keuangan, O. J. (2023). *Indonesian Islamic financial development report 2023*.
- Khan, R. U., Arif, H., Sahar, N. E., Ali, A., & Abbasi, M. A. (2022). The role of financial resources in SMEs' financial and environmental performance; the mediating role of green innovation. *Green Finance*, 4(1), 36–53. <https://doi.org/10.3934/GF.2022002>
- Lawhaisy ZB, Othman AHA (2023), "Introducing an Islamic equity-based microfinance models for MSMEs in the State of Libya". *Qualitative Research in Financial Markets*, Vol. 15 No. 1 pp. 1–28, doi: <https://doi.org/10.1108/QRFM-01-2021-0017>
- Nareswari, N., Nurmasari, N. D., & Putranti, L. (2023). Financial Constraints of Micro, Small, and Medium-sized Enterprises (MSMEs) in the Indonesia Creative Industries. *Journal of Economics, Business, and Accountancy Ventura*, 25(3), 312-321. <https://doi.org/10.14414/jebav.v25i3.3433>
- Nasrulloh, A. A., Nurhasanah, E., Sukmawati, H., & Joni, J. (2025). Optimization of Islamic Financial Schemes for MSMEs Development. *EKONOMIKA SYARIAH: Journal of Economic Studies*, 8(2), 159–175. <https://doi.org/10.30983/es.v8i2.8252>
- Ndukaji, Adaobi, *Alternative Financing and SME Resilience During Economic Shocks* (August 13, 2025). <http://dx.doi.org/10.2139/ssrn.5968516>
- Nurfadilah, D., Noer Rahmi, A., Febryanti, S., & Dinta Insyani Zukhruf Firdausi, R. (2025). SME's Access to Islamic financing for Enhancing Energy Efficiency: A Fuzzy AHP Approach. *Journal The Winners*, 26(1), 59–71. <https://doi.org/10.21512/tw.v26i1.12637>
- Okello Candiya Bongomin G, Chrysostome E, Nkongolo-Bakenda J, Yourougou P (2024), "Credit counselling: a contemporary strategy for survival of micro small and medium-sized enterprises in

under-developed financial markets post COVID-19 pandemic". *Journal of Entrepreneurship and Public Policy*, Vol. 13 No. 2 pp. 200–233, doi: <https://doi.org/10.1108/JEPP-06-2023-0053>

- Organisation for Economic Co-operation and Development. (2018). *Financing SMEs and Entrepreneurs 2018: An OECD Scoreboard*. OECD Publishing.
- Pane, M., Kesuma, S. A., Muda, I., & Syarif, F. (2025). A Systematic Literature Review of the Pecking Order Theory on Financing Decisions. *Journal of FinTech and Sustainable Finance*, 1, 46–53. <https://doi.org/10.31875/2755-8398.2025.01.04>
- Quarshie, M. A., Djimatey, R., Akhtar, S., & Nawaah, D. (2026). Maximizing financial efficiency through technological synergy: Unleashing ICT for enhanced cash management in SMEs. *Journal of the International Council for Small Business*, 7(1), 66–96. <https://doi.org/10.1080/26437015.2025.2461025>
- Rose, S., Spinks, N., & Canhoto, A.I. (2023). *Management Research: Applying the Principles of Business Research Methods* (2nd ed.). Routledge. <https://doi.org/10.4324/9781003381006>
- Shanmuganathan, M. (2020). Behavioural finance in an era of artificial intelligence: Longitudinal case study of robo-advisors in investment decisions. *Journal of Behavioral and Experimental Finance*, 27. <https://doi.org/10.1016/j.jbef.2020.100297>
- Sreenivasulu, A., & Mamilla, R. (2024). Financial flexibility through bibliometric analysis: An innovative and systematic review in the global context. *International Journal of Process Management and Benchmarking*, 17(4), 502–520. <https://doi.org/10.1504/IJPMB.2024.139973>
- Subhani, Bilal H., Asif Ali, and Farman Ali. 2026. "Revisiting Pecking Order Theory in a Green Era: Financial Development, Climate Uncertainty, and Environmental Investment," *The Manchester School*: 94. no. 2), 145–167. <https://doi.org/10.1111/manc.70017>.
- Sun, W., Yin, C., & Zeng, Y. (2023). Precautionary motive or private benefit motive for holding cash: Evidence from CEO ownership. *International Review of Financial Analysis*, 90. <https://doi.org/10.1016/j.irfa.2023.102820>
- Takona, J.P. *Research design: qualitative, quantitative, and mixed methods approaches / sixth edition*. *Qual Quant* 58, 1011–1013 (2024). <https://doi.org/10.1007/s11135-023-01798-2>
- Vaithilingam, S., Ong, C. S., Moisescu, O. I., & Nair, M. S. (2024). Robustness checks in PLS-SEM: A review of recent practices and recommendations for future applications in business research. *Journal of Business Research*, 173. <https://doi.org/10.1016/j.jbusres.2023.114465>
- Wang, D., Li, L., & Zhao, D. (2022). Corporate finance risk prediction based on LightGBM. *Information Sciences*, 602, 259–268. <https://doi.org/10.1016/j.ins.2022.04.058>
- Wang, X. (2022). Financial liberalization and the investment-cash flow sensitivity. *Journal of International Financial Markets, Institutions and Money*, 77. <https://doi.org/10.1016/j.intfin.2022.101527>
- Wijerathna HS, Anuradha N, Ajward R (2024), "Do selected board governance mechanisms strengthen the link between institutional and macroeconomic variables and the financial flexibility of corporations? Empirical evidence from an emerging economy". *Journal of Asia Business Studies*, Vol. 18 No. 2 pp. 412–429, doi: <https://doi.org/10.1108/JABS-06-2023-0219>
- Wu W, Alkaraan F, Le C (2025), "The moderating effects of corporate governance and investment efficiency on the nexus between financial flexibility and firm performance". *Journal of Financial Reporting and Accounting*, Vol. 23 No. 6 pp. 2573–2598, doi: <https://doi.org/10.1108/JFRA-05-2023-0234>
- Yilmazer, S. (2024). *Access to Finance and Economic Uncertainty: An Examination on Smes in Turkey and Europe*.
- Yilmazer, S., Avcı, E., & Çinko, M. (2025). The Effect of Economic Uncertainty on Access to Finance: An Empirical Examination for European SMEs. *Journal of East-West Business*, 31(2), 193–217. <https://doi.org/10.1080/10669868.2024.2426654>

- Zhang, X. (2025). Origin and Development of Financial Flexibility: A Systematic Literature Review. *Economics & Management Information*, 1–16. <https://doi.org/10.62836/emi.v4i4.499>
- Zubair, S., Kabir, R., & Huang, X. (2020). Does the financial crisis change the effect of financing on investment? Evidence from private SMEs. *Journal of Business Research*, 110, 456–463. <https://doi.org/10.1016/j.jbusres.2020.01.063>