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Micro-entrepreneurship and household economic well-being: the moderating role of women's economic agency

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ABSTRACT

Household economic well-being in low-income families depends heavily on women-run micro-enterprises, yet it remains unclear whether the returns to micro-entrepreneurship are conditioned by women's economic agency. Drawing on Schumpeterian entrepreneurship theory and Kabeer's resources–agency–achievements framework, this study examines whether women's economic agency—operationalized as access to, participation in, control over, and benefit from economic resources—moderates the effect of micro-entrepreneurship (entrepreneurial orientation: innovativeness, achievement orientation, risk-taking, leadership, autonomy, and resilience) on family economic strengthening, measured as household economic well-being (income, household composition, education, health, and housing). Survey data were collected from 400 women micro-entrepreneurs who are clients of a group-based Sharia microfinance programme, selected by proportional stratified random sampling from a population of 499,906 clients; the sample size was set with the Slovin formula (e = 5%) and confirmed by an a priori power analysis ($f^2 = 0.02$, $\alpha = 0.05$, power = 0.80, minimum n = 395). All scales showed acceptable reliability (Cronbach's $\alpha = 0.743$–0.780). Simple and moderated regression analyses show that micro-entrepreneurship positively affects household economic well-being ($\beta = 0.344$, $t = 7.309$, $p < 0.001$, $R^2 = 0.118$). Adding women's economic agency and the interaction term raises the explained variance to $R^2 = 0.444$ ($F = 105.493$, $p < 0.001$). Women's economic agency has a strong direct effect ($B = 1.006$, $p < 0.001$) and a negative interaction with micro-entrepreneurship ($B = -0.015$), indicating a quasi-moderating, substitutive mechanism: the marginal return to micro-entrepreneurship is largest among women with lower agency and declines as their control over resources increases. The study contributes by specifying how women's agency conditions the entrepreneurship–household well-being pathway in an Islamic microfinance context and suggests that microfinance providers should combine business support with interventions that expand women's control over resources.

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Introduction

Micro-entrepreneurship has become a key driver of economic growth in developing countries, including Indonesia, due to its ability to create economic opportunities and reduce poverty. Micro-enterprises, often operated with limited capital, play a crucial role in increasing family incomes, improving access to education, health, and social stability, all of which collectively contribute to strengthening family economies. Family well-being, as a multidimensional indicator encompassing economic, social, and quality-of-life aspects, is a key focus in efforts to achieve sustainable development.

Women play a strategic role in micro-entrepreneurship, particularly in informal sectors such as trade, culinary arts, and crafts. However, women entrepreneurs often face obstacles such as limited access to capital, training, technology, and markets, particularly among socio-economically vulnerable groups. Women's empowerment, which includes improving access to education, entrepreneurial skills, economic resources, and strengthened decision-making, is a key factor in increasing the success of micro-enterprises and their impact on strengthening family economies. Women's empowerment not only strengthens individual economic capacity but also allows for more effective resource allocation for family needs, such as children's education and improved nutrition.

However, the evidence on whether supporting women's micro-enterprises actually improves household welfare is far from conclusive. Randomized evaluations of microcredit in six countries found only modest effects on business activity and no transformative effects on average household consumption or income (Angelucci et al., 2015; Banerjee, Duflo, et al., 2015; Banerjee, Karlan, & Zinman, 2015). Field experiments show that the returns to capital in women-owned micro-enterprises are much lower than in men-owned ones, often close to zero, although both groups face similar credit constraints (de Mel et al., 2008, 2009), and that cash given to women entrepreneurs tends to be absorbed into household spending rather than invested in the business (Fafchamps et al., 2014). Rigid repayment structures can even discourage risky but productive investment (Field et al., 2013), and lending to women may reduce household vulnerability without increasing women's own control over resources (Garikipati, 2008; Kevane & Wydick, 2001). Reviews of what works conclude that interventions providing resources alone rarely succeed unless they also expand women's capacity to make and enforce economic choices (Buvinić & Furst-Nichols, 2016; Cornwall, 2016). Taken together, this literature suggests that the problem lies not in the absence of women's entrepreneurial activity but in the weak and context-dependent conversion of that activity into household economic well-being—a conversion process that previous studies have rarely modelled explicitly.

Bantul Regency's development plan for socio-economically sensitive women's empowerment is implemented through micro-entrepreneurship training to increase family income and social welfare (Wina Qurratu A'yun, 2021). Furthermore, women's empowerment initiatives through community-based micro-enterprises improve families' quality of life by increasing income and access to social services (Andari et al., 2023). Women's empowerment through entrepreneurial cooperatives in India strengthens the contribution of micro-enterprises to family welfare, through increased income and more inclusive decision-making (Bharti, 2021).

Entrepreneurship, especially that run by women through cooperatives, contributes to family well-being by increasing income and strengthening women's economic position within the household (Bharti, 2021). Micro-enterprises have a direct impact on economic well-being and an indirect impact on social well-being by improving women's social status.

Women's empowerment includes capacity building through skills training, access to capital, technology, and strengthened decision-making. Women's empowerment plays a role in strengthening the relationship between entrepreneurship and family well-being as a manifestation of economic growth, because empowered women are better able to manage micro-enterprises effectively (Huis et al., 2017). Furthermore, women's empowerment through training and access to market networks strengthens the contribution of micro-enterprises to family well-being (Andari et al., 2023). Women's empowerment through microfinance in India strengthens the performance of micro-entrepreneurship, which in turn improves family income and child well-being (Khan et al., 2022).

This research is highly urgent given the crucial contribution of micro-entrepreneurship to supporting economic development and strengthening family finances, particularly amidst global economic challenges such as post-COVID-19 pandemic recovery and economic uncertainty. Women's empowerment through social-group-based micro-enterprises improves families' quality of life, yet challenges such as limited access to digital technology still limit the potential of women entrepreneurs (Andari et al., 2023). In various regions across Indonesia, female micro-entrepreneurs still face structural barriers such as patriarchal norms, limited access to digital markets, and a lack of inclusive policy support. This research is urgently needed to understand how women's empowerment can effectively moderate the relationship between micro-entrepreneurship and family finances, particularly in the context of digital transformation, resource access, and relevant local socio-cultural contexts.

Research by Shagufta Tariq Khan, Mohd Abass Bhat, and Mohi-Ud-Din Sangmi suggests that women's empowerment through microfinance improves family well-being, but this research does not fully integrate local socio-cultural factors into regional characteristics that influence empowerment effectiveness (Khan et

al., 2022). With increasing reliance on digital technology and changing socio-cultural-economic dynamics, this research is crucial for identifying women's empowerment strategies that can maximize the impact of micro-entrepreneurship on family empowerment.

Although the literature has demonstrated a positive relationship between entrepreneurship, women's empowerment, and family well-being, several research gaps remain that need to be addressed. Entrepreneurship has been shown to improve family economic well-being (Williams et al., 2020), and women's empowerment is known to support entrepreneurship (Bharti, 2021). However, research specifically examining the role of women's empowerment as a moderating variable in the relationship between micro-entrepreneurship and family economic empowerment, with unique regional characteristics across Indonesia, remains limited. The study by Wina Qurratu A'yun (2021) discusses women's empowerment in entrepreneurship, but does not explicitly analyze its moderating effect on family economic well-being in the context of regional characteristics, education levels, and access to technology, which may influence the effectiveness of women's empowerment. Similarly, the research of Malaquias and Silva (2020) focuses on technology adoption in entrepreneurship but does not sufficiently explore the cultural context of collectivism and Islamic finance. Khan et al. (2022) examine the role of microfinance in women's empowerment and family welfare in India, but do not integrate local socio-cultural factors, such as patriarchal norms or family structure, which may influence the effectiveness of women's empowerment as moderating variables.

Theoretically, this study combines two lenses. The Schumpeterian view treats entrepreneurship as the discovery and exploitation of opportunities through new combinations of resources (Shane & Venkataraman, 2000; Śledzik, 2013); at the micro-enterprise level this behaviour is captured by entrepreneurial orientation—innovativeness, achievement orientation, risk-taking, and autonomy—which is consistently associated with better business performance (Lumpkin & Dess, 1996; Rauch et al., 2009). Business performance, however, does not automatically translate into household well-being. Kabeer's (1999) resources–agency–achievements framework and the bargaining approach to the household (Agarwal, 1997) argue that resources become welfare outcomes only to the extent that women can exercise agency over them, that is, have access to them, participate in decisions about them, control their use, and benefit from their allocation (Huis et al., 2017; Kabeer, 2005). Women's economic agency is therefore theorised as the conversion factor that conditions how much of the economic value generated by micro-entrepreneurship reaches household income, children's education, health, and housing (Duflo, 2012; Pitt et al., 2006).

Competing explanations exist. The resource-based view would attribute household gains to the stock of resources controlled by the enterprise rather than to women's agency (Barney, 1991); institutional theory would locate the explanation in formal and informal rules—such as patriarchal norms or Islamic finance contracts—that shape entrepreneurial returns (Bruton et al., 2010; Welter, 2011); and gender-aware and feminist perspectives warn that women's entrepreneurship cannot be understood apart from its household and societal context (Ahl, 2006; Brush et al., 2009; Jennings & Brush, 2013; Minniti & Naudé, 2010). These frameworks are not mutually exclusive, but only the agency perspective predicts an interaction: the effect of micro-entrepreneurship on household well-being should vary with the level of women's agency. Testing this interaction therefore makes it possible to distinguish the agency mechanism from purely resource-based or institutional explanations.

Based on this gap, this study aims to fill the knowledge gap by examining in depth the role of women's empowerment as a moderating variable in the relationship between micro-entrepreneurship and family economic strengthening, by considering contextual factors regarding digital technology, socio-culture, education level and Islamic finance. The novelty of this study lies in explicitly modelling women's economic agency—measured through access, participation, control, and benefit—as a conversion factor (moderator) of the micro-entrepreneurship–household well-being pathway among clients of a group-based Sharia microfinance programme, a setting in which Islamic financing contracts, collectivist norms, and patriarchal household structures jointly shape women's agency and which the studies reviewed above (Bharti, 2021; Khan et al., 2022; Wina Qurratu A'yun, 2021) have not examined.

This research is important because it can provide significant theoretical and practical contributions. Theoretically, this study will enrich the literature on the role of women's empowerment as a moderating variable in the relationship between micro-entrepreneurship and family economic empowerment, which remains underexplored in the context of regional socio-cultural uniqueness, particularly in the Ciayumajakuning region of West Java. Practically, it can produce research that contributes to and recommends for the development of inclusive women's empowerment policies and plans, such as digital skills education and training, access to Sharia-compliant microfinance, and market network support.

Accordingly, this study addresses two research questions. RQ1: To what extent does micro-entrepreneurship, measured as the entrepreneurial orientation of women micro-entrepreneurs (seven-item scale), affect family economic strengthening, measured as household economic well-being across income, household composition, education, health, and housing (six-item scale)? RQ2: Does women's economic agency, measured through access, participation, control, and benefit (five-item scale), moderate this relationship? Based on the framework above, the following hypotheses are proposed:

H1: Micro-entrepreneurship has a positive effect on family economic strengthening.
H2: Women's economic agency moderates the effect of micro-entrepreneurship on family economic strengthening.

By understanding how women's empowerment moderates the relationship between micro-entrepreneurship and family economic empowerment, this research can achieve sustainable development goals related to gender equality and poverty alleviation. This research is also relevant to support the government in determining the direction of MSME development policies with a focus on women's empowerment, thereby strengthening the economic resilience of families and society as a whole. The resulting research contribution can provide input for developing micro-entrepreneurship with inclusive women's empowerment to support sustainable family economic empowerment.

Method

Research Design, Data and Sample

This study employed a quantitative explanatory design based on a cross-sectional survey. An explanatory survey design, rather than an experimental or quasi-experimental causal-inference design, was chosen because the aim is to test a theoretically specified conditional (moderating) relationship among perceptual constructs in a naturally occurring population, in which random assignment of entrepreneurship or empowerment is neither feasible nor ethical; moderated regression analysis is the established technique for this purpose (Dawson, 2014; Sharma et al., 1981). The sample consisted of 400 women entrepreneurs receiving productive financing under the Sharia scheme at the Mekaar units of the PNM financing institution in the Ciayumajakuning area of West Java, Indonesia. Data were collected with a structured questionnaire of closed-ended items rated on a five-point Likert scale (1 = strongly disagree to 5 = strongly agree) for the independent, moderator, and dependent variables. The variables used in this study were:
[1] Independent variable micro-entrepreneurship (X)
[2] Moderator variable: women's economic agency/empowerment (Z)
[3] Dependent variable: family economic strengthening, operationalized as household economic well-being (Y)

The population comprised women entrepreneurs who received financing from PNM Mekaar units in the Ciayumajakuning area (City/Regency of Cirebon, Indramayu, Majalengka, and Kuningan), West Java, Indonesia, totalling 499,906 clients served by 135 Mekaar unit offices in 2023. The minimum sample size was determined with the Slovin formula, $n = N/(1 + N \cdot e^2)$, using a 5% margin of error: $n = 499{,}906/(1 + 499{,}906 \times 0.05^2) = 399.7$, rounded to 400. Because the Slovin formula does not address statistical power for interaction effects, an a priori power analysis was also conducted with G*Power 3.1 (Faul et al., 2009) for a linear multiple regression F-test of one tested predictor (the X × Z interaction) in a model with three predictors, assuming a small effect size ($f^2 = 0.02$), $\alpha = 0.05$, and power = 0.80. The required minimum sample was 395; the sample of 400 therefore provides adequate power (≈ 0.81) to detect small moderation effects. Respondents were selected by proportional stratified random sampling: the four regencies/cities served as strata, the sample was allocated to each stratum in proportion to its number of clients, and respondents were drawn at random from the client lists of the unit offices in each stratum. Clients were eligible if they had an active Sharia productive financing contract in 2023 and operated a micro-enterprise. The sampling frame and the research model are summarised in Figure 1.

Variable Measurement

The main dependent variable in this study is family economic strengthening (Y), defined as the stages for organizing and developing communities in this case families by encouraging individual growth, changing social norms, and changing behavior (Huriani et al., 2021). To avoid treating it as a generic developmental outcome, the construct is operationalized as household economic well-being and measured with six items covering (1) family income level; (2) household composition; (3) education level of family members; (4) health status of family members; and (5) housing conditions and available facilities. These dimensions follow

the multidimensional approach to measuring well-being and empowerment outcomes (Alkire et al., 2013; Kabeer, 1999).

The independent variable in this study is micro-entrepreneurship (X), operationalized as the entrepreneurial orientation of the micro-entrepreneur, namely the ability to innovate and create based on local wisdom in creating opportunities for success with a smaller business size. It is measured with seven items covering (1) optimism, innovation, and creativity (Śledzik, 2013); (2) performance and growth orientation; (3) risk taking (Shane & Venkataraman, 2000); (4) leadership; (5) independence (Lumpkin & Dess, 1996); and (6) tenacity and resilience (Rauch et al., 2009).

Women's empowerment, operationalized in this study as women's economic agency (Z), functions as the moderating variable. Following Kabeer (1999) and Huis et al. (2017), it refers to women's ability to make and act on economic choices. Women's ability to manage themselves to be more confident, play an active role and participate as problem solvers. Empowerment efforts to be able to have access and control over economic, social, cultural and other aspects including the use of technology (Sukarnoto et al., 2023), and it is measured with five items covering four dimensions: (1) access, utilizing environmental resources for productivity including the use of technology, Islamic microfinance facilities , and market access; (2) participation, taking part in the use of resources by paying attention to social activities and cultural characteristics; (3) Control, the opportunity to use resources and control their use; and (4) benefits, equality in the use of resources and contributing to development. In this article, the terms women's empowerment and women's economic agency refer to this same construct.

Research Model

This study tests two hypotheses (H1 and H2; Figure 1). H1 was tested with simple linear regression of Y on X. H2 was tested with Moderated Regression Analysis (MRA), in which the product term X × Z is added to a regression containing X and Z (Dawson, 2014; Sharma et al., 1981): $Y = \alpha + \beta1X + \beta2Z + \beta3(X \times Z) + \varepsilon$. Moderation is supported when β3 is statistically significant ($\alpha = 0.05$). Following Sharma et al. (1981), Z is classified as a pure moderator if β3 is significant but β2 is not, and as a quasi-moderator if both β2 and β3 are significant. The sign of β3 shows whether higher women's agency amplifies ($\beta3 > 0$) or attenuates ($\beta3 < 0$) the effect of micro-entrepreneurship, and the conditional effect of X at a given level of Z is calculated as $\beta1 + \beta3Z$ (Dawson, 2014). Effect sizes are reported as R^2, the change in R^2 attributable to the interaction term, and Cohen's f^2. Variables were computed as summed item scores, and all analyses were performed in SPSS after the classical regression assumptions had been tested.

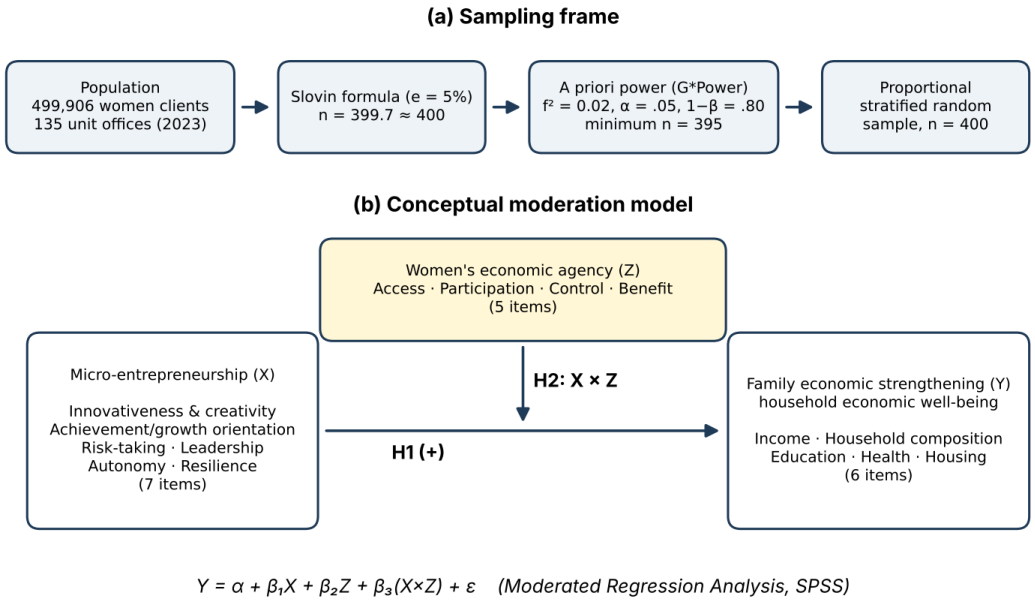


Figure 1. Research design: (a) sampling frame and (b) conceptual moderation model

Results and Discussions

Descriptive statistics show that the mean item score was 3.91 for micro-entrepreneurship (item means 3.67–4.09), 4.11 for family economic strengthening (4.07–4.14), and 3.98 for women's economic agency (3.85–4.10) on the five-point scale. These values indicate that respondents generally rated themselves favourably on all three constructs. Because they are self-assessments, the means describe perceived levels only; they are not, by themselves, evidence of Schumpeterian innovation, and the relationships among the constructs are evaluated through the inferential tests reported below.

Validity and Reliability Test

Construct validity was assessed with corrected item–total (Pearson) correlations and internal consistency with Cronbach's alpha (Tavakol & Dennick, 2011). With n = 400 (df = 398) and α = 0.05 (two-tailed), the critical r-table value is 0.098, so any item with r > 0.098 is statistically significant. As summarised in Table 1, all items exceeded this threshold, and the Cronbach's alpha values (0.743–0.780) exceeded both the 0.60 and the 0.70 benchmarks, indicating acceptable reliability. Significance against the r-table value is, however, a lenient criterion at this sample size. Two items—X.7 (r = 0.159) and Y6 (r = 0.162)—fall well below the commonly recommended item–total correlation of 0.30, indicating weak convergence with their constructs. They were retained to preserve the content coverage of the tenacity/resilience and housing dimensions, but this weakness is acknowledged as a limitation, and results involving these constructs should be interpreted with caution.

Table 1. Validity and Reliability of the Measurement Instruments

Variable	Item	r-count	r-table	Remark	Cronbach's α
Micro-entrepreneurship (X)	X.1	0.643	0.098	Valid	0.743
	X.2	0.574	0.098	Valid	
	X.3	0.606	0.098	Valid	
	X.4	0.583	0.098	Valid	
	X.5	0.588	0.098	Valid	
	X.6	0.575	0.098	Valid	
	X.7	0.159	0.098	Valid (< 0.30)	
Family economic strengthening (Y)	Y1	0.626	0.098	Valid	0.758
	Y2	0.709	0.098	Valid	
	Y3	0.717	0.098	Valid	
	Y4	0.675	0.098	Valid	
	Y5	0.667	0.098	Valid	
	Y6	0.162	0.098	Valid (< 0.30)	
Women's economic agency (Z)	Z.1	0.665	0.098	Valid	0.780
	Z.2	0.663	0.098	Valid	
	Z.3	0.543	0.098	Valid	
	Z.4	0.617	0.098	Valid	
	Z.5	0.697	0.098	Valid	

Source: Processed Data (2025)

Classical Assumption Test

Classical assumption tests for analyzing the influence of variables include normality tests, linearity tests, multicollinearity tests, and heteroscedasticity tests (Ghasemi & Zahediasl, 2012; O'Brien, 2007). The test results obtained the following data:

The normality test is used to evaluate whether a data sample comes from a normally distributed population. This is necessary because if the distribution is not normal, statistical methods that require the assumption of a normal distribution can produce inaccurate results (Ghasemi & Zahediasl, 2012).

Table 2. Normality Test

One-Sample Kolmogorov-Smirnov Test		
		Unstandardized Residual
N		400
Normal Parameters [a,b]	Mean	.0000000
	Standard Deviation	2.16249148
Most Extreme Differences	Absolute	.051
	Positive	.051
	Negative	-.041
Test Statistics		.062

One-Sample Kolmogorov-Smirnov Test		
Monte Carlo Sig. (2-tailed)	Sig.	.210 [d]

Source: Processed Data (2025)

The results of the normality test with Kolmogorov-Smirnov in the table above, the Monte Carlo Sig. (2-tailed) number obtained is 0.210, greater than the Kolmogorov-Smirnov normality test criteria value > 0.05. Thus, it shows that the data is normally distributed, and the results are consistently the same as the previous test. Therefore, in research, the data can be used.

The linearity test ensures that the basic assumptions used in linear regression analysis are met, namely that the interaction between the independent and dependent variables is linear (Dawson, 2014). This ensures that the data can be tested and explained using linear regression.

Table 3. Linearity Test

Variables	***Sig Linearity* Value**	***Sig* Value** ***Deviation from Linearity***
Strengthening Family Economy * Micro Entrepreneurship	0,000	0.057
Strengthening Family Economy * Women's Empowerment	0,000	0.051

Source: Processed Data (2025)

Linearity test with Anova test in Table 3 shows the sig value of linearity for Family Economic Strengthening and Micro Entrepreneurship, the sig value of linearity data is 0.000<0.05 and the sig value. deviation from linearity on data processing is obtained 0.057>0.05. Furthermore, the sig value of linearity for Family Economic Strengthening and Women's Empowerment is 0.000<0.05 and the sig value of deviation from linearity on data processing is obtained 0.051>0.05. So it can be concluded that there is a linear relationship between the independent variable and the dependent variable, so that the use of data can be explained quite well using the linear regression approach.

The multicollinearity test aims to determine whether there is a correlation between the independent variables in a regression model . The multicollinearity test is used by looking at the magnitude of the influence factors of the Variance Inflation Factor (VIF) and tolerance variables (O'Brien, 2007).

Table 4. Multicollinearity Test

Variables	***Collinearity Statistics***	
	VIF	**Tolerance**
Micro Entrepreneurship	1,204	0.831
Women's empowerment	1,182	0.846

Source: Processed Data (2025)

The results of the multicollinearity test show a tolerance value of more than 0.1 and a value of the Variance Inflation Factor (VIF) is less than 10 for the variable indicated by the micro-entrepreneurship tolerance of 0.831. The VIF for micro-entrepreneurship is also 1.204. The women's empowerment variable has a VIF of 1.182 and a tolerance of 0.846. If the VIF is less than 10 and the tolerance is greater than 0.1, the regression model is considered to have no multicollinearity problem. The results of this test indicate that the regression model can be used in this study.

The heteroscedasticity test is used in testing the regression model to see whether there is inequality from one observation to another regarding the variance of the residuals. (Glejser, 1969). This is done to ensure whether or not there are symptoms of heteroscedasticity.

Table 5. Heteroscedasticity Test with Glejser Test

Coefficients [a]						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	3,382	.440		7,687	.000
	Entrepreneurship	-.038	.032	-.104	-1,179	.239
	Women 's Empowerment	-.098	.026	-.241	-3,724	.051

Source: Processed Data (2025)

The Glejser test for heteroscedasticity revealed a significance of >0.05 for the micro-entrepreneurship and women's empowerment variables. The micro-entrepreneurship variable was 0.239 and the women's empowerment variable was 0.051, respectively. This study concluded that there was no heteroscedasticity in the regression model.

Autocorrelation was examined with the Durbin–Watson (DW) statistic, which ranges from 0 to 4; values close to 2 indicate no first-order autocorrelation, whereas values approaching 0 or 4 indicate positive or negative autocorrelation, respectively (Durbin & Watson, 1950).

Table 6. Autocorrelation Test

Model Summary [b]					
Model	R	R Square	Adjusted R Square	Standard Error of the Estimate	Durbin-Watson
1	.677 [a]	.458	.451	2.13523	1,868

Source: Processed Data (2025)

The autocorrelation test produced a DW value of 1.868 (Table 6), which is close to 2, indicating that the residuals do not exhibit first-order autocorrelation.

Hypothesis Testing

The Influence of Micro Entrepreneurship on Strengthening the Family Economy

The results of the Simple Regression Test for the entrepreneurship variable (X) and the family economic strengthening variable (Y) are as follows:

Table 7. Simple Regression Test

Coefficients [a]						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	15,549	.991		15,684	.000
	Micro Entrepreneurship	.282	.039	.344	7,309	.000
a. Dependent Variable: Strengthening Family Economy						

Source: Processed Data (2025)

The simple regression results (Table 7) show that micro-entrepreneurship has a positive and significant effect on family economic strengthening (B = 0.282, SE = 0.039, β = 0.344, t = 7.309 > t-table 1.649 [one-tailed, df = 398], $p < 0.001$). Thus, H1 is supported.

Table 8. Correlation and Determination Coefficient Test

Model Summary [b]				
Model	R	R Square	Adjusted R Square	Standard Error of the Estimate
1	.344 [a]	.118	.116	2.70917
a. Predictors: (Constant) , Micro Entrepreneurship				
b. Dependent Variable: Strengthening Family Economy				

Source: Processed Data (2025)

The correlation coefficient between micro-entrepreneurship and family economic strengthening is r = 0.344, and the coefficient of determination is $R^2 = 0.118$ (adjusted $R^2 = 0.116$; Table 8). Micro-entrepreneurship alone therefore explains 11.8% of the variance in household economic well-being, while 88.2% is explained by factors outside the model. This corresponds to Cohen's $f^2 = 0.134$, a small-to-medium effect size.

Women's Economic Agency as a Moderator of the Effect of Micro-Entrepreneurship on Family Economic Strengthening

Table 9. Significance Test of Individual Parameters

Coefficients [a]						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.319	4,592		-.069	.945
	Micro- entrepreneurship (X)	.425	.182	.519	2,334	.020
	Women's Empowerment (Z)	1,006	.233	.939	4,316	.000
	Moderate_(X*Z)	-.015	.009	-.565	-1,610	.018
a. Dependent Variable: Strengthening Family Economy						

Source: Processed Data (2025)

Table 9 shows that, in the moderated regression model, micro-entrepreneurship (X) has a positive coefficient (B = 0.425, SE = 0.182, t = 2.334, p = 0.020), women's economic agency (Z) has a strong positive direct effect (B = 1.006, SE = 0.233, t = 4.316, p < 0.001), and the interaction term X × Z has a negative coefficient (B = −0.015, SE = 0.009, t = −1.610, p = 0.018). Because both β2 and β3 are significant, women's economic agency acts as a quasi-moderator (Sharma et al., 1981): it affects family economic strengthening directly and also conditions the effect of micro-entrepreneurship. The negative sign of β3 means that the moderation is attenuating rather than amplifying. The conditional effect of micro-entrepreneurship, calculated as 0.425 − 0.015Z, is about 0.164 at a relatively low agency score (Z = 17.4, i.e., a mean item score of 3.48), 0.127 at the sample mean (Z ≈ 19.9), and 0.089 at a relatively high agency score (Z = 22.4, i.e., a mean item score of 4.48). In other words, micro-entrepreneurship contributes most to household well-being among women with lower economic agency, whereas for highly empowered women household well-being depends more on their agency itself. H2 is therefore supported in the sense that the X–Y relationship varies with women's agency, but the moderation is substitutive rather than reinforcing.

Table 10. Simultaneous Significance Test

ANOVA [a]						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1471,746	3	490,582	105,493	.000 [b]
	Residual	1841,552	396	4,650		
	Total	3313.297	399			

a. Dependent Variable: Strengthening Family Economy
b. Predictors: (Constant), Moderate_2, Micro Entrepreneurship, Women's Empowerment

Source: Processed Data (2025)

The calculated F value of 105.493 was obtained from the ANOVA test (F test), with a significance level of 0.000 (<0.05). It was stated that micro-entrepreneurship (X), women's empowerment (Z), and their interaction term (X × Z) had a significant simultaneous effect on strengthening the family economy (Y).

Table 11. Determination Coefficient Test

Model Summary [b]				
Model	R	R Square	Adjusted R Square	Standard Error of the Estimate
1	.666 [a]	.444	.440	2.15647

a. Predictors: (Constant), Moderate, Micro- entrepreneurship, Women's Empowerment
b. Dependent Variable: Strengthening Family Economy

Source: Processed Data (2025)

The R^2 of the moderated model is 0.444 (adjusted R^2 = 0.440; Table 11), meaning that micro-entrepreneurship, women's economic agency, and their interaction together explain 44.4% of the variance in family economic strengthening, compared with 11.8% for micro-entrepreneurship alone ($\Delta R^2 = 0.326$). Most of this increase is attributable to the direct effect of women's economic agency. The unique contribution of the interaction term, derived from its t-value [$\Delta R^2 = t^2(1 - R^2)/df$], is approximately 0.004 ($f^2 \approx 0.007$), a small effect. Hence, women's economic agency matters for family economic strengthening mainly through its direct effect, while its moderating effect, although present, is modest in magnitude.

The first finding confirms H1: micro-entrepreneurship has a positive effect on family economic strengthening (β = 0.344; R^2 = 0.118). The strength of this association is greater than the mean correlation of about 0.24 between entrepreneurial orientation and business performance reported in a meta-analysis by Rauch et al. (2009), and it is consistent with evidence that women's entrepreneurship improves household income and social well-being in Indonesia and other emerging economies (Aktar et al., 2020; Dewi et al., 2022; Ge et al., 2022; Riandika, 2020). It contrasts, however, with the modest or insignificant average consumption effects found in randomized microcredit evaluations (Angelucci et al., 2015; Banerjee, Duflo, et al., 2015; Banerjee, Karlan, & Zinman, 2015) and with the near-zero returns to capital found for many women-owned micro-enterprises (de Mel et al., 2009; Fafchamps et al., 2014). A plausible explanation is that this study measures entrepreneurial behaviour among women who already run enterprises rather than the effect of access to credit itself: entrepreneurial orientation captures how resources are used, which is precisely what credit-access experiments do not observe.

From a Schumpeterian perspective, the result suggests that the entrepreneurial behaviours measured here—creativity, achievement orientation, risk-taking, and autonomy—are economically consequential for households (Shane & Venkataraman, 2000; Śledzik, 2013). This interpretation must nevertheless be made carefully. A high mean score (3.91) indicates only that respondents perceive themselves as entrepreneurial;

micro-enterprises of the kind served by group-based microfinance—typically small trade, culinary, and craft businesses—are better described as replicative than as innovative in Schumpeter's sense. The evidence therefore supports the narrower claim that entrepreneurial orientation, rather than radical innovation, is associated with household gains, which is consistent with the entrepreneurial-orientation literature (Lumpkin & Dess, 1996; Rauch et al., 2009) and with evidence that the household returns to women's businesses depend on the support available in their environment (Ge et al., 2022; Minniti & Naudé, 2010).

The positive role of women's entrepreneurship is also consistent with studies showing that women who receive appropriate support can create businesses that raise family prosperity (Aktar et al., 2020), that cooperative and community-based enterprises improve women's economic position in the household (Andari et al., 2023; Bharti, 2021), and that easy access to financing designed for women is most effective when used for income-generating activities (Gu & Nie, 2021). Unlike the cooperative model studied by Bharti (2021) or the government programme studied by Wina Qurratu A'yun (2021), the present study examines clients of a group-based Sharia microfinance programme, which shows that the entrepreneurship–welfare link also holds under Islamic financing contracts.

The second finding shows that women's economic agency is a quasi-moderator with a strong direct effect (B = 1.006) and a negative interaction with micro-entrepreneurship (B = −0.015). This pattern differs from the expectation, common in the empowerment literature, that empowerment amplifies the returns to entrepreneurship (Bharti, 2021; Khan et al., 2022; Sukarnoto et al., 2023). Instead, it points to a substitution mechanism: where women have low agency over resources, their own entrepreneurial behaviour is the main channel through which household well-being improves; where women already have strong access, participation, control, and benefit, household well-being is driven largely by that agency itself, and additional entrepreneurial effort yields smaller marginal gains. This interpretation is consistent with Kabeer's (1999) argument that agency is itself a welfare-producing capability rather than merely an amplifier of resources, and with evidence that credit and transfers channelled to women improve household outcomes through women's control over allocation decisions (Duflo, 2012; Hashemi et al., 1996; Pitt et al., 2006). It also resonates with Garikipati's (2008) 'impact paradox', in which household gains and women's empowerment do not move in lockstep, and with Doepke and Tertilt's (2019) conclusion that the effects of empowering women depend on how household resources are allocated. In the Mekaar context, the access dimension (Sharia microfinance, digital technology, and markets) and the control dimension are theoretically the most likely channels through which women convert enterprise income into children's education, health, and housing (Huis et al., 2017; Malaquias & Silva, 2020).

Alternative explanations must be considered. From a resource-based view (Barney, 1991), women with higher agency may simply possess more resources—capital, skills, and networks—so that the strong direct effect of Z reflects resource endowments rather than agency per se. Institutional theory (Bruton et al., 2010; Welter, 2011) would attribute the pattern to the group-based Sharia contract and to local norms that regulate women's economic roles, while gender-aware and feminist perspectives (Ahl, 2006; Brush et al., 2009; Jennings & Brush, 2013) would emphasise that household gender relations, rather than enterprise characteristics, determine who benefits from women's businesses (Agarwal, 1997; Kevane & Wydick, 2001). Because the agency scale explicitly measures control over and benefit from resources, and because the effect of micro-entrepreneurship varies with agency rather than only adding to it, the results are more consistent with the agency/bargaining explanation than with a purely resource-based account. The cross-sectional design, however, cannot rule out these alternatives, and future studies should model them directly.

Theoretically, this study makes three contributions. First, it extends entrepreneurship theory to the household level by showing that entrepreneurial orientation, and not only access to credit, is associated with household economic well-being. Second, it provides empirical support for the resources–agency–achievements framework by showing that women's economic agency conditions the conversion of entrepreneurial activity into household well-being. Third, it shows that this conditioning is substitutive rather than reinforcing, which refines the common assumption that empowerment always amplifies the benefits of women's entrepreneurship (Buvinić & Furst-Nichols, 2016; Cornwall, 2016).

Practically, the results suggest that microfinance institutions such as PNM Mekaar should target business-skills mentoring at clients with lower economic agency, for whom entrepreneurial behaviour yields the largest household gains, while also investing in agency-building components—joint decision-making, control over the use of loans, and access to digital financial services—because agency has the strongest direct association with household well-being. For government and community stakeholders, programmes for women-owned MSMEs should combine credit, entrepreneurial training, and gender-transformative interventions rather than treating credit as sufficient.

This study has several limitations that define the boundary conditions of its findings. First, regarding internal validity, the sample consists only of women who self-selected into, and remained in, the PNM Mekaar Sharia financing programme; this may introduce selection and survivorship bias, because more motivated or more empowered women are more likely to join and stay in such programmes. Second, the cross-sectional design does not permit causal inference, and reverse causality—for example, household well-being enabling entrepreneurship—cannot be excluded. Third, all constructs were measured with self-reported Likert-scale items from a single source at a single point in time, so common-method bias may have inflated the associations; household income, education, health, and housing were not verified with objective data. Fourth, regarding measurement validity, items X.7 and Y6 had item–total correlations below 0.30, construct validity was assessed only with item–total correlations rather than confirmatory factor analysis, and the interaction term was computed from uncentred scores, which inflates its collinearity with the main effects. Fifth, regarding external validity, the sampling frame is limited to four regencies/cities in the Ciayumajakuning area of West Java and to one Sharia microfinance provider, so the findings may not generalise to women entrepreneurs outside microfinance programmes, to conventional microfinance clients, or to regions with different socio-cultural characteristics. Finally, the moderating effect is small ($\Delta R^2 \approx 0.004$). Future research should use longitudinal or quasi-experimental designs with non-client comparison groups, confirmatory factor analysis or structural equation modelling with mean-centred interaction terms, multi-group analysis across regions and financing schemes, and objective household data.

Conclusions

This study examined whether micro-entrepreneurship improves family economic strengthening—operationalized as household economic well-being—and whether women's economic agency moderates this relationship among 400 Sharia microfinance clients. Two conclusions follow. First, micro-entrepreneurship has a positive and significant effect on family economic strengthening ($B = 0.282$, $\beta = 0.344$, $p < 0.001$), explaining 11.8% of its variance. Second, women's economic agency is a quasi-moderator: it has a strong direct effect ($B = 1.006$, $p < 0.001$) and a negative interaction with micro-entrepreneurship ($B = -0.015$), and the full model explains 44.4% of the variance ($F = 105.493$, $p < 0.001$). The negative interaction indicates that the marginal contribution of micro-entrepreneurship to household well-being is largest among women with lower agency and declines as women gain greater access to, participation in, control over, and benefit from economic resources. Women's empowerment therefore operates mainly through women's control over resources, which both directly raises household well-being and partly substitutes for the returns to entrepreneurial effort. Future research should verify this mechanism with longitudinal data, latent-variable modelling, and comparison groups outside microfinance programmes.

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