
Financial Literacy and Saving Behavior among Factory Workers: The Mediating Role of Self-Control

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Abstract

Purpose - This study examines whether financial literacy is associated with saving behavior among factory workers in Lamongan, Indonesia, and whether self-control mediates this association. **Design/methodology/approach** - A cross-sectional survey was conducted with 91 factory workers. Financial literacy, self-control, and saving behavior were each operationalized as reflective constructs with eight indicators. The proposed model was estimated using partial least squares structural equation modeling (PLS-SEM) in SmartPLS 4. **Findings** - Financial literacy was positively associated with saving behavior ($\beta = .414$, $t = 4.329$, $p < .001$) and self-control ($\beta = .781$, $t = 19.284$, $p < .001$). Self-control was also positively associated with saving behavior ($\beta = .518$, $t = 4.840$, $p < .001$). The indirect association between financial literacy and saving behavior through self-control was significant ($\beta = .404$, $t = 4.255$, $p < .001$), indicating complementary partial mediation. The model explained 77.3% of the variance in saving behavior and 61.0% of the variance in self-control. **Research limitations/implications** - Because the data are cross-sectional, self-reported, and geographically concentrated, the estimates should be interpreted as associations rather than causal effects. Longitudinal or experimental designs using objective financial outcomes are required to establish temporal and causal ordering. **Practical implications** - Workplace financial programs may be more effective when financial education is combined with behavioral supports that strengthen goal setting, expenditure control, and regular saving routines. **Originality/value** - The study extends research on the financial knowledge-behavior gap by positioning self-control as a behavioral mechanism linking financial literacy to saving behavior among factory workers, a population rarely examined in this literature.

Keywords: financial literacy; saving behavior; self-control; factory workers; PLS-SEM; Indonesia

1. Introduction

Household saving is a central component of financial resilience because it allows individuals to absorb income shocks, manage emergencies, and finance future goals without excessive reliance on debt. At the aggregate level, private saving also supports capital formation and economic development. Yet the capacity to save is not determined by income alone. It also depends on whether individuals understand financial concepts, translate that understanding into day-to-day decisions, and resist immediate consumption when it conflicts with longer-term goals.

Financial literacy is commonly understood as a combination of financial awareness, knowledge, skills, attitudes, and behaviors required to make sound financial decisions and achieve individual financial well-being (OECD, 2023). A substantial literature links financial literacy to planning, saving, investment, and debt management (Lusardi & Mitchell, 2014; Morgan & Long, 2020). However, financial knowledge does not automatically produce better behavior. Meta-analytic and experimental evidence indicates that the behavioral effects of financial education are generally positive but heterogeneous and sensitive to the timing, intensity, and context of the intervention (Fernandes et al., 2014; Kaiser & Menkhoff, 2017; Kaiser et al., 2022). This knowledge-behavior gap suggests that a behavioral mechanism is needed to explain why similarly informed individuals may make different saving decisions.

Self-control offers such a mechanism. In the planner-doer framework, individuals experience tension between long-term preferences and immediate consumption impulses (Thaler & Shefrin, 1981). Higher self-control enables people to regulate spending, follow budgets, and protect resources earmarked for future use. Empirical studies have consequently linked self-control to stronger financial management and higher financial well-being (Strömbäck et al., 2017), as well as to more consistent saving habits (Boto-García et al., 2022). Automatic enrollment and other commitment mechanisms further show that behavioral design can materially influence saving even when information is unchanged (Madrian & Shea, 2001).

The Indonesian context makes the issue especially salient. The 2022 National Survey on Financial Literacy and Inclusion reported a financial literacy index of 49.68%, while the 2024 joint survey by the Financial Services Authority and Statistics Indonesia reported 65.43%. Because the surveys differ in implementation and should not be treated as a simple time series, the figures are best interpreted as evidence that financial capability remains a continuing policy priority rather than as proof of a directly comparable trend (Otoritas Jasa Keuangan [OJK], 2022; OJK & Statistics Indonesia [BPS], 2024). For factory workers receiving regular but often constrained wages, saving decisions must be made alongside recurring household expenditures and consumption pressures. Their setting provides a theoretically relevant test of whether financial literacy is associated with saving directly and indirectly through self-control.

Prior Indonesian studies have examined financial literacy, self-control, and saving among students or young adults (Anastasya & Pamungkas, 2023; Silboro & Rochmawati, 2021). International evidence also documents that self-control can function as a mediator or moderator in the financial literacy-saving relationship (Lupikawaty et al., 2024; Mpaata et al., 2023). Nevertheless, evidence from factory workers remains limited, and the behavioral mechanism has not been sufficiently examined in a workplace population in Lamongan. This study addresses that gap by testing a mediation model among factory workers. It contributes by (1) extending financial literacy research beyond student samples, (2) examining self-control as a mechanism that may bridge financial knowledge and action, and (3) deriving practical implications for workplace-based financial capability programs.

Accordingly, the study asks: Is financial literacy positively associated with saving behavior among factory workers, and does self-control mediate this association? The analysis uses PLS-SEM to estimate the direct and indirect paths. Because the design is cross-sectional, the terminology throughout this article deliberately emphasizes associations rather than causal effects.

2. Theoretical Background and Hypothesis Development

2.1 Financial literacy and saving behavior

Financial literacy can improve saving decisions by helping individuals understand interest, inflation, risk, financial products, and the trade-offs between present and future consumption. Financially literate individuals are also better positioned to compare products, formulate budgets, and set realistic financial goals. These capabilities reduce informational barriers and may increase the likelihood that a portion of income is reserved rather than fully consumed. Cross-country and household-level evidence generally shows a positive association between financial literacy and saving or financial inclusion (Afsar et al., 2018; Lusardi & Mitchell, 2014; Morgan & Long, 2020). Nevertheless, the magnitude of the association varies, reinforcing the need to examine behavioral pathways in specific populations. H1. Financial literacy is positively associated with saving behavior among factory workers.

2.2 Financial literacy and self-control

Financial literacy may support self-regulation by clarifying the long-term consequences of short-term spending. Knowledge of opportunity costs, compound growth, and emergency risk can make future losses more cognitively salient and can support deliberate planning. In this sense, financial literacy does not necessarily change the underlying personality trait of self-control; rather, it may strengthen the financial application of self-regulatory capacity. Prior studies report positive links between financial literacy and financial self-control or disciplined financial behavior (Anastasya & Pamungkas, 2023; Prihatini & Irianto, 2021). Because the causal direction is theoretically contestable, the present cross-sectional analysis tests an association rather than asserting that literacy changes a stable trait.

H2. Financial literacy is positively associated with self-control in financial decision-making.

2.3 Self-control and saving behavior

Saving requires an individual to defer consumption and maintain a future-oriented allocation rule. Self-control therefore has a direct behavioral relevance: it enables individuals to resist unplanned purchases, adhere to budgets, and preserve resources for future needs. The planner-doer model predicts that commitment and self-regulatory mechanisms can protect long-term plans from immediate impulses (Thaler & Shefrin, 1981). Consistent with this logic, self-control predicts financial management, saving, and financial well-being (Boto-García et al., 2022; Strömbäck et al., 2017).

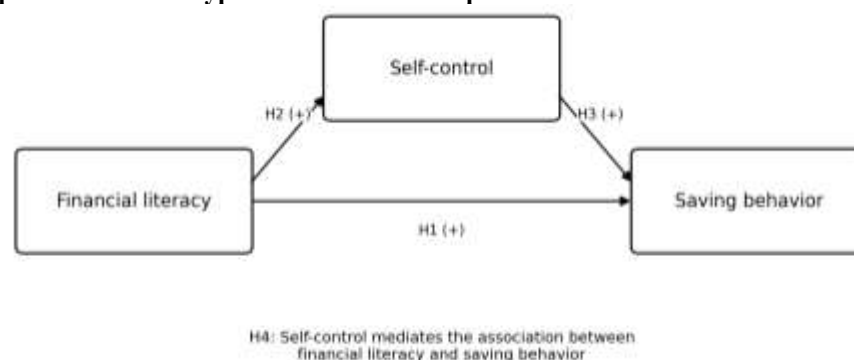
H3. Self-control is positively associated with saving behavior among factory workers.

2.4 The mediating role of self-control

Financial literacy may contribute to saving through two channels. The first is a direct informational channel: workers who understand financial concepts may make better allocation decisions. The second is a behavioral channel: financial understanding may help workers recognize long-term consequences, structure goals, and regulate consumption, which in turn supports saving. Self-control is therefore positioned as an intervening mechanism linking financial literacy to saving behavior. Evidence from different populations suggests that self-control can mediate or condition the relationship between financial capability and saving (Lupikawaty et al., 2024; Silboro & Rochmawati, 2021).

H4. Self-control mediates the positive association between financial literacy and saving behavior.

Figure 1. Conceptual model and hypothesized relationships



3. Methods

3.1 Research design and setting

The study used a quantitative, cross-sectional survey design. The target population comprised factory workers employed in Lamongan Regency, East Java, Indonesia. Primary data were

collected through paper-based questionnaires distributed through the human resource departments of several factories. The unit of analysis was the individual worker.

3.2 Population, sampling, and sample size

The source study reported probability sampling and used the Slovin formula to obtain a final sample of 91 respondents. The analysis therefore uses 91 complete observations. However, a reputable international journal will require enough information to reproduce the sample-size calculation and verify that probability sampling was actually implemented.

The final sample is sufficient to estimate the reported model computationally, but the manuscript cannot make a defensible statistical-power claim until an a priori or inverse-square-root power assessment is reported using the expected minimum path coefficient and desired significance level (Kock & Hadaya, 2018).

3.3 Measures

The questionnaire contained 24 reflective indicators: eight indicators for financial literacy, eight for self-control, and eight for saving behavior. The observed outer loadings reported in the source data ranged from .725 to .791 for financial literacy, .703 to .783 for self-control, and .708 to .856 for saving behavior. Higher construct scores were interpreted as higher financial literacy, stronger self-control, and stronger saving behavior, respectively.

3.4 Data analysis

The model was estimated using SmartPLS 4. The measurement model was assessed using indicator loadings, average variance extracted (AVE), and composite reliability. Convergent validity was considered acceptable when loadings were approximately .70 or higher and AVE exceeded .50; internal-consistency reliability was considered acceptable when composite reliability exceeded .70 (Hair et al., 2022). The structural model was evaluated using path coefficients, t statistics, p values, and the coefficient of determination (R-squared). The indirect path from financial literacy to saving behavior through self-control was used to assess mediation. Because both the direct and indirect paths were significant and pointed in the same direction, mediation was classified as complementary partial mediation following Zhao et al. (2010).

Values reported as $p = .000$ in the original SmartPLS output are presented as $p < .001$, because a probability value is not exactly zero. The manuscript reports only diagnostics available in the source document and does not fabricate missing output.

4. Results

4.1 Measurement model

All reported indicator loadings exceeded .70. AVE values ranged from .552 to .605, and composite reliability values ranged from .908 to .924. The available results therefore support indicator reliability, convergent validity, and internal-consistency reliability. They do not, by themselves, establish discriminant validity; HTMT or an equivalent criterion must be reported before submission (Henseler et al., 2015).

Table 1. Measurement-model results

Construct	Indicator	Outer loading	AVE	Composite reliability
Financial literacy	X1	.767	.605	.924
	X2	.737		
	X3	.791		
	X4	.725		
	X5	.727		

Construct	Indicator	Outer loading	AVE	Composite reliability
	X6	.737		
	X7	.732		
	X8	.731		
Saving behavior	Y1	.761	.572	.914
	Y2	.729		
	Y3	.762		
	Y4	.856		
	Y5	.776		
	Y6	.737		
	Y7	.708		
	Y8	.711		
Self-control	Z1	.731	.552	.908
	Z2	.771		
	Z3	.738		
	Z4	.783		
	Z5	.703		
	Z6	.707		
	Z7	.731		
	Z8	.776		

Note. AVE = average variance extracted.

4.2 Structural model

The model explained 77.3% of the variance in saving behavior (adjusted R-squared = .768) and 61.0% of the variance in self-control (adjusted R-squared = .605). These values indicate substantial in-sample explanatory power, although predictive performance outside the sample cannot be inferred without Q-squared or PLSpredict results.

Table 2. Explained variance in endogenous constructs

Endogenous construct	R-squared	Adjusted R-squared
Saving behavior	.773	.768
Self-control	.610	.605

All three direct hypotheses were supported. Financial literacy was positively associated with saving behavior (beta = .414, $t = 4.329$, $p < .001$) and with self-control (beta = .781, $t = 19.284$, $p < .001$). Self-control was positively associated with saving behavior (beta = .518, $t = 4.840$, $p < .001$).

Table 3. Direct path estimates

Path	Original sample	Sample mean	SD	t statistic	p value	Decision
Financial literacy -> Saving behavior	.414	.436	.096	4.329	< .001	H1 supported
Financial literacy -> Self-control	.781	.790	.040	19.284	< .001	H2 supported

Path	Original sample	Sample mean	SD	t statistic	p value	Decision
Self-control -> Saving behavior	.518	.492	.107	4.840	< .001	H3 supported

4.3 Mediation analysis

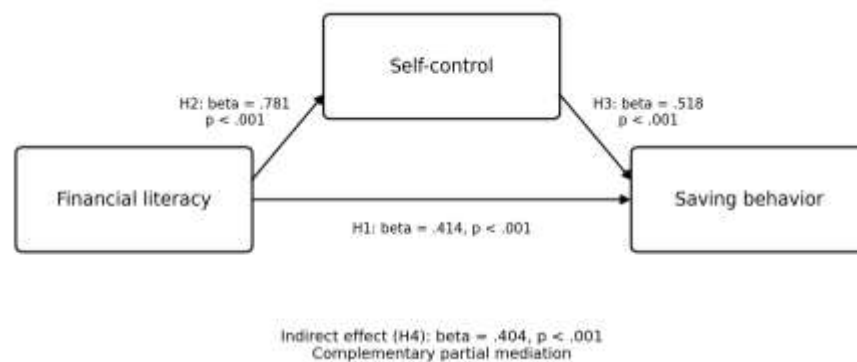
The specific indirect association from financial literacy to saving behavior through self-control was positive and significant ($\beta = .404$, $t = 4.255$, $p < .001$). Because the direct path remained positive and significant after including the mediator, the pattern represents complementary partial mediation rather than full mediation (Zhao et al., 2010). The derived total association was .818 (.414 direct + .404 indirect).

Table 4. Indirect and total associations

Effect	Original sample	Sample mean	SD	t statistic	p value	Interpretation
FL -> Self-control -> Saving behavior	.404	.390	.095	4.255	< .001	H4 supported
Total association: FL -> Saving behavior	.818	-	-	-	-	Direct + indirect

Note. FL = financial literacy. The total association is algebraically derived from the reported direct and indirect coefficients.

Figure 2. Estimated structural model



5. Discussion

5.1 Financial literacy and saving behavior

The positive association between financial literacy and saving behavior supports H1. Workers who report stronger financial literacy are also more likely to report disciplined saving. This finding is consistent with studies showing that financial knowledge and capability are related to saving and other prudent financial outcomes (Afsar et al., 2018; Lusardi & Mitchell, 2014; Morgan & Long, 2020). A plausible interpretation is that financially literate workers are better able to recognize the benefits of emergency reserves, evaluate intertemporal trade-offs, and allocate income according to explicit goals.

However, the result should not be interpreted as evidence that information alone causes workers to save. Financial education research finds that behavior change depends on context, delivery, and the proximity of education to actual decisions (Fernandes et al., 2014; Kaiser & Menkhoff, 2017; Kaiser et al., 2022). The significant direct path therefore represents an important but incomplete explanation of saving behavior.

5.2 Financial literacy and self-control

H2 was supported by a strong positive association between financial literacy and self-control. Financial understanding may help workers anticipate the consequences of impulsive purchases and formulate rules for managing wages. In practical terms, budgeting knowledge can make self-

control easier to exercise by converting an abstract intention into a specific spending limit or saving target. This interpretation is compatible with Indonesian evidence linking financial literacy and self-regulation in financial behavior (Anastasya & Pamungkas, 2023; Prihatini & Irianto, 2021).

The magnitude of the path ($\beta = .781$) also warrants caution. Such a strong relationship may reflect conceptual overlap between the measures, same-source measurement, or reverse ordering in which self-controlled individuals acquire more financial knowledge. Discriminant-validity statistics and alternative structural models are therefore necessary before drawing a strong theoretical conclusion. Longitudinal data would be particularly useful for determining temporal ordering.

5.3 Self-control and saving behavior

The positive association between self-control and saving behavior supports H3 and is consistent with the planner-doer account of intertemporal choice (Thaler & Shefrin, 1981). Workers with stronger self-control may be more capable of resisting discretionary spending, delaying gratification, and maintaining saving commitments. This interpretation aligns with prior evidence that self-control predicts financial behavior and well-being (Strömbäck et al., 2017) and contributes to the formation of saving habits (Boto-García et al., 2022).

The result also highlights why purely informational interventions can be insufficient. Even when workers understand the value of saving, immediate demands and consumption cues can disrupt intention. Behavioral supports that reduce the need for repeated willpower - for example, payroll deductions, automatic transfers, mental accounts, and goal-linked reminders - may complement education (Madrian & Shea, 2001).

5.4 Mediating role of self-control

H4 was supported. The significant direct and indirect paths indicate complementary partial mediation: financial literacy is associated with saving behavior both independently and through self-control. This pattern supports the proposed knowledge-to-action mechanism. Financial understanding may establish the rationale for saving, whereas self-control helps protect the saving intention when short-term consumption pressures arise. The finding is broadly consistent with studies positioning self-control as a mediator or boundary condition in the financial literacy-saving relationship (Lupikawaty et al., 2024; Mpaata et al., 2023; Silboro & Rochmawati, 2021).

The mediation result remains associational. Cross-sectional mediation cannot establish that financial literacy precedes self-control or that self-control precedes saving. The model should therefore be viewed as a theoretically informed representation of covariance rather than a proven causal sequence.

5.5 Theoretical contribution

The study contributes to financial behavior research in three ways. First, it extends a literature dominated by student and general household samples to factory workers. Second, it integrates a cognitive resource (financial literacy) with a behavioral-regulatory resource (self-control), offering a more complete account of saving than either factor alone. Third, the complementary mediation pattern suggests that financial literacy and self-control are not substitutes: financial literacy retains a direct association with saving while self-control carries an additional indirect association.

5.6 Practical implications

Employers and local financial institutions should avoid treating financial education as a one-off seminar. A more credible workplace program would combine brief, decision-timed education with practical tools: personal cash-flow mapping, realistic saving goals, emergency-fund targets, automatic payroll saving or scheduled transfers, spending alerts, and confidential financial

counseling. Behavioral supports should be voluntary, transparent, and designed to preserve worker autonomy.

The findings should not be used to attribute low saving solely to individual discipline. Saving capacity is constrained by wages, household obligations, job security, debt, and access to appropriate products. Workplace interventions should therefore complement - not replace - fair compensation, predictable payment, worker protection, and access to low-cost financial services.

6. Limitations and Future Research

Several limitations materially constrain interpretation. First, the cross-sectional design prevents causal and temporal inference. Second, the sample was small and geographically concentrated in Lamongan, limiting external validity. Third, all constructs were self-reported in the same questionnaire, creating risks of social-desirability bias and common-method variance. Fourth, the source manuscript did not provide respondent demographics, response rate, instrument provenance, item wording, scale anchors, translation procedures, ethics information, or a fully reproducible sampling description. Fifth, the reported PLS-SEM results were incomplete: discriminant validity, collinearity, confidence intervals, effect sizes, predictive relevance, and out-of-sample prediction were not available. Finally, the very strong financial literacy-self-control path may indicate construct overlap or an alternative causal ordering.

Future research should use longitudinal, panel, or experimental designs; combine self-reports with objective financial-literacy tests and actual saving balances or transaction records; report a priori statistical power; test competing models in which self-control predicts literacy acquisition; and examine whether income, tenure, age, gender, household dependents, employment status, and financial inclusion moderate the relationships. Multigroup studies across factories, occupations, and regions would clarify generalizability. Preregistered interventions could also compare financial education alone with education plus automatic saving or commitment devices.

7. Conclusion

Among 91 factory workers in Lamongan, financial literacy was positively associated with saving behavior and self-control, while self-control was positively associated with saving behavior. The indirect association through self-control was significant, indicating complementary partial mediation. The results support a behavioral interpretation in which financial knowledge is more likely to translate into saving when workers can regulate immediate spending impulses and maintain future-oriented goals. Nevertheless, the evidence is associational and should be strengthened through complete measurement reporting and longitudinal or experimental research. For practice, workplace financial-capability initiatives should integrate financial knowledge with concrete behavioral supports rather than relying on information alone.

Declarations

Acknowledgements: The author thanks academic reviewers and colleagues who may provide comments during the journal submission process.

Funding: This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Competing interests: The authors declare no competing interests.

Data availability: The dataset may be requested from the corresponding author subject to institutional permission and confidentiality requirements.

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