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FinTech Literacy and Entrepreneurial Intention among MSMEs: Trust as Mediator and Perceived Risk Moderator Effects Model

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Abstract

The increasing integration of financial technology into MSME business activities has not always been accompanied by a corresponding growth in technology-based entrepreneurial intention, suggesting that technical competence by itself is insufficient to stimulate strategic forms of entrepreneurial behavior. This study integrates FinTech literacy, trust, and perceived risk within a single behavioral framework to explain entrepreneurial intention among MSMEs. Drawing on the Theory of Planned Behavior together with insights from technology adoption studies, trust is positioned as a mediating psychological mechanism, while perceived risk is examined as a contingency factor shaping the effectiveness of trust. Employing a quantitative explanatory design, information was gathered from 210 MSME owners along with managers in the Solo Raya and Yogyakarta Special Region and subsequently examined using the Partial Least Squares approach to Structural Equation Modeling (PLS-SEM). The results show that FinTech literacy does not directly influence entrepreneurial intention; however, it exerts a significant indirect influence via trust. Furthermore, perceived risk serves as a negative moderating factor in the relationship between trust and entrepreneurial intention, weakening its influence under high-risk perceptions. This research advances the digital entrepreneurship literature by showing that FinTech literacy operates primarily through affective and risk-related mechanisms rather than as a direct driver of intention, and by empirically establishing perceived risk as a boundary condition in the trust–entrepreneurial intention relationship in the MSME context of a developing economy. Practically, the findings highlight the need for FinTech literacy initiatives and regulatory frameworks that emphasize trust-building and risk reduction to foster sustainable entrepreneurial behavior among MSMEs.

KEYWORDS

FinTech literacy, trust, perceived risk, entrepreneurial intention, MSMEs.

Introduction

Digital financial transformation represents a key domain that contributes to the achievement of the Sustainable Development Goals (SDGs), especially SDG 8 (Decent Work and Economic Growth) and SDG 9 (Industry, Innovation, and Infrastructure), through the expansion of financial inclusion and the strengthening of MSME participation in the digital economy (Idrees & Ullah, 2024; OECD, 2023). Within the evolution of the financial sector, financial technology (FinTech) plays a strategic role in broadening access to financial services and lowering transaction-related costs for MSMEs, particularly for developing countries that still experience financial exclusion (Jafri et al., 2024; World Bank, 2022).

Several studies have proven the positive link between the application of FinTech and the success of MSMEs in the digital economic environment (Bagis et al., 2024; Wu et al., 2011; Yang, 2025). However, the level of the adoption and application of FinTech by MSMEs is not the same, indicating that the availability of technology is not the only determinant shaping technology adoption decisions

(Jafri et al., 2024; Moncada et al., 2025). This condition highlights the crucial influence of business actors' cognitive and behavioral attributes on the effective utilization of technology for entrepreneurial activities.

FinTech literacy is considered a key determinant of MSME readiness to utilize digital financial services. This literacy encompasses an understanding of service features, digital risks, transaction security, and the implications of FinTech use for business management and sustainability (Idrees & Ullah, 2024; Sumar'In et al., 2025). Recent research shows that individuals with stronger FinTech literacy tend to demonstrate greater receptiveness to financial innovation and a higher willingness to integrate digital technologies into their business operations (Al-Okaily et al., 2021; Gomber Peter, 2017; Sumar'In et al., 2025).

However, prior studies have reported inconsistent findings regarding the role of FinTech literacy in shaping entrepreneurial intention (Bagis et al., 2025; Jafri et al., 2024; Yang, 2025). While some studies indicate that higher levels of FinTech literacy directly enhance entrepreneurial intention, other studies find that such relationships are not always significant (Jafri et al., 2024).

The FinTech literacy, trust, and entrepreneurial intentions relationship can be understood using a behavioral approach. Within the Theory of Planned Behavior (TPB), intention is viewed as the most immediate predictor of behavior and is shaped by a combination of individual attitudes, perceived social expectations, and perceived control over the behavior (Ajzen, 2020; Bagis & Darmawan, 2022). In the digital economy, FinTech literacy is a cognitive resource that enhances entrepreneurs' control, and trust is an affective resource that diminishes uncertainty in technology-driven decision-making (Chatterjee *et al.*, 2023; Yang, 2025). Nevertheless, much of the existing literature continues to rely on simplified causal assumptions, without adequately exploring contextual conditions that may strengthen or weaken the capacity of trust to translate cognitive resources into entrepreneurial intention (Sumar'In *et al.*, 2025).

The technology adoption literature also highlights perceived risk as an inherent characteristic of digital financial system use. Perceived risk encompasses perceptions of potential financial loss, data security risks, and transaction uncertainty inherent in FinTech services (Emezue et al., 2022; Herni Justiana Astuti, 2025; Idris et al., 2019; Jafri et al., 2024). Empirical research shows that perceived risk does not necessarily function as a direct deterrent to adoption, but instead shapes how effectively trust influences individuals' intentions to engage with technology (Albuainain & Ashby, 2025). However, most studies still treat perceived risk as an independent or mediating variable, while empirical evidence on its function as a moderating mechanism influencing the linkage between trust and entrepreneurial intention remains very limited.

Building on prior literature, several distinct research gaps can be identified. Although prior studies have examined FinTech literacy, trust, and perceived risk independently, limited research has integrated these variables within a single mediated–moderated behavioral framework, particularly in the context of MSMEs in developing economies (Idrees & Ullah, 2024; Jafri et al., 2024). Second, the mediating role of trust in clarifying how FinTech literacy translates into entrepreneurial intention has not been sufficiently examined in MSME contexts (Sumar'In *et al.*, 2025). Third, empirical insights regarding perceived risk as a contextual moderator that alters the intensity of the relationship between trust and entrepreneurial intention are still scarce, particularly in developing economies characterized by high levels of digital uncertainty (Liñán & Fayolle, 2022)

This research was developed to address these gaps by examining how FinTech literacy relates to entrepreneurial intention through trust as an intervening psychological mechanism, while also assessing perceived risk as a contextual factor that conditions the strength of this relationship. The results of this study are expected to extend the discussion in digital entrepreneurship and FinTech adoption literature, as well as to offer practical insights for enhancing the contribution of MSMEs to sustainable development objectives through the adoption of inclusive and trustworthy financial technologies.

FinTech Literacy and Entrepreneurial Intention

FinTech literacy can be understood as the ability of individuals or business actors to understand, assess, and apply digital financial services in an effective manner to support business decision-making. This literacy encompasses an understanding of service features, digital risks, transaction security, and the implications of FinTech use for business management and sustainability (Idrees & Ullah, 2024; Lyons, 2022). In the context of MSMEs, FinTech literacy serves as a cognitive resource that enables business actors to assess the opportunities and limitations of financial technology in entrepreneurial activities. According to the Theory of Planned Behavior (TPB), the formation of behavioral intention is influenced by individual attitudes toward behavior, perceived social pressure, and perceptions of control over the behavior (Ajzen, 2020). FinTech literacy can be positioned as a factor

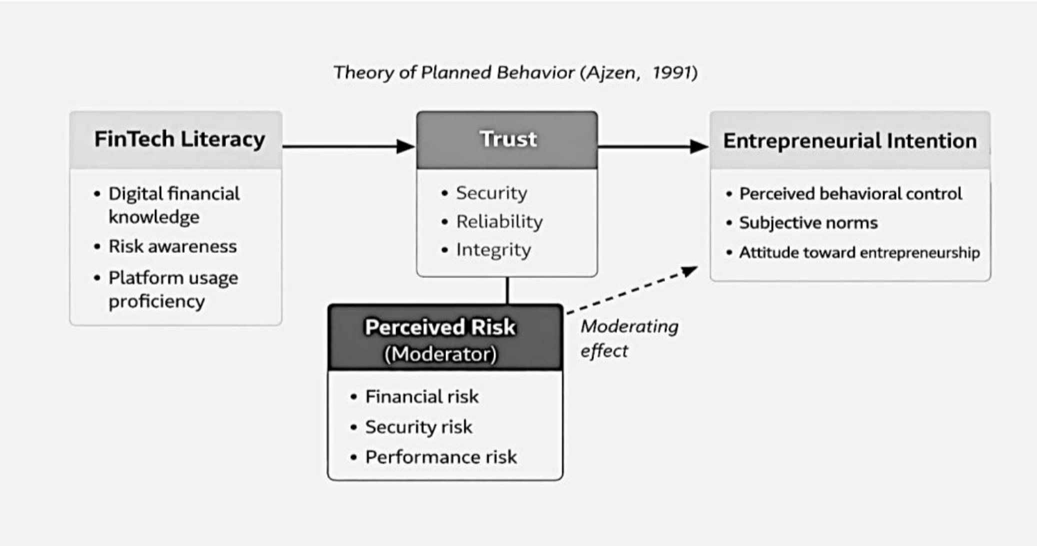

Figure 1. Conceptual Framework

that enhances perceived behavioral control, as greater technological understanding increases individuals' confidence in their ability to adopt and operate FinTech effectively. Empirical studies show that individuals with more advanced levels of FinTech literacy tend to demonstrate stronger readiness to participate in digitally driven entrepreneurial activities (Albuainain & Ashby, 2025; Gomber Peter, 2017; Sumar'In et al., 2025). Based on the TPB framework and these empirical findings, FinTech literacy is viewed as an initial determinant driving the formation of entrepreneurial intentions in the digital economy era. Therefore, the following hypothesis is formulated:
Hypothesis 1: FinTech literacy has a positive effect on entrepreneurial intention.

FinTech Literacy and Trust

Technology adoption understands trust as user belief in the dependability, security, and soundness of a technological system (Belanche *et al.*, 2021; Jafri *et al.*, 2024). Trust is a crucial element in the FinTech context because digital financial transactions involve uncertainty, information asymmetry, and non-physical risks. The relationship between literacy and trust can be explained through the Technology Acceptance Model (TAM) along with its development. TAM asserts that user understanding of technological systems shapes their evaluations regarding how easy the technology is to use and how beneficial it is perceived to be, which subsequently influences users' attitudes and trust toward the technology. FinTech literacy enables business actors to understand the working mechanisms, security features, and benefits of FinTech, thereby reducing ambiguity and increasing trust in digital financial services (Bagis et al., 2020; Idrees & Ullah, 2024; Ikhsani et al., 2022). Empirical findings support this argument by showing that greater levels of financial as well as digital literacy are positively associated correlated with higher trust in technology-based financial services (Sari *et al.*, 2025; Sumar'In *et al.*, 2025). Therefore, the following hypothesis is proposed:
Hypothesis 2: FinTech literacy positively influences trust.

Trust and Entrepreneurial Intention

Trust operates as a psychological process that helps reduce perceived uncertainty and risk associated with technology-based decision-making. Within the digital entrepreneurship context, trust in FinTech can strengthen positive attitudes toward technology use and increase individuals' confidence in utilizing these services in business activities (Jafri *et al.*, 2024; Yang, 2025). The TPB (Theory of Planned Behavior) assumes that trust can be positioned as an affective factor that influences attitudes toward behavior and strengthens intentions to act (Ajzen, 2020; Schlaegel et al., 2021). Individuals with high levels of trust in FinTech systems tend to view the use of financial technology as a safe and profitable option, thus being more motivated to develop technology-based entrepreneurial intentions. Empirical studies show that trust directly affects technology adoption intentions and entrepreneurial intentions, especially in complex digital environments (Belanche *et al.*, 2021; Yang, 2025). Based on these theoretical and empirical considerations, the following hypothesis is proposed:
Hypothesis 3: Trust positively influences entrepreneurial intention.

The Role of Trust Mediation

Although FinTech literacy is an important prerequisite, its influence on entrepreneurial intention is often indirect. The behavioral and technology adoption literature suggests that cognitive factors influence intention through specific psychological mechanisms, one of which is trust (Jafri *et al.*, 2024; Yang, 2025). The TPB and TAM argue that FinTech literacy increases perceived control as well as comprehension of technology, which subsequently shapes trust toward FinTech systems. This trust then plays a role in translating these cognitive abilities into entrepreneurial intention. Several previous studies have shown that trust functions as an intervening mechanism linking knowledge or literacy to technology adoption intention (Trinh et al., 2022; Wu et al., 2011), but testing this mechanism in the context of MSME entrepreneurial intention is still limited. Accordingly, the following mediation hypothesis is formulated:
Hypothesis 4: Trust mediates the relationship between FinTech literacy and entrepreneurial intention.

The Moderating Role of Perceived Risk

Perceived risk refers to how individuals assess potential losses arising from the use of technology, including financial exposure, data security concerns, and uncertainty regarding system reliability (Dwivedi *et al.*, 2022; Lyons, 2022). Within the technology adoption literature, perceived risk is regarded as a conditional factor that may affect the strength of the association between trust and behavioral intentions. Based on risk theory in technology adoption, trust and perceived risk have an interrelated relationship. Trust can reduce risk perception, but at high risk levels, the effectiveness of trust in encouraging technology use intentions tends to decrease (Bu et al., 2020; Mahmud et al., 2023). In this sense, perceived risk operates as a moderating factor that shapes how strongly trust influences entrepreneurial intention within the FinTech setting. Despite its theoretical relevance, empirical investigation of the moderating function of perceived risk in the trust-entrepreneurial intention relationship remains scarce, particularly among MSMEs in developing economies (Dwivedi *et al.*, 2022; Herni Justiana Astuti, 2025). Accordingly, the following hypothesis is proposed:
Hypothesis 5: Perceived risk moderates the effect of trust on entrepreneurial intention.

Drawing on these hypotheses, a conceptual framework is developed to depict relationships among FinTech literacy, trust, perceived risk, and entrepreneurial intention (see Figure 1).

Methods

This study employs a quantitative approach using an explanatory research framework to investigate the relationship between FinTech literacy and entrepreneurial intention, where trust functions as a mediating mechanism and perceived risk operates as a moderating factor. The object of this study focuses on Micro, Small, and Medium Enterprises (MSMEs) that have actively adopted FinTech services in their business operations. The research respondents were owners or managers of MSMEs operating in the Solo Raya and Yogyakarta Special Region (DIY) areas. This region was chosen because it has a high level of MSME activity and relatively developed adoption of digital financial services, making it relevant to study FinTech-based entrepreneurial behavior in the context of developing countries (Idrees & Ullah, 2024; Zhang et al., 2026).

Sampling was carried out through purposive techniques guided by the following criteria: (1) MSMEs have operated for a minimum of one year, and (2) have utilized at least one FinTech service, such as QRIS, e-wallets, mobile banking, or P2P lending. Primary data were collected via a structured questionnaire using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The operationalization and measurement of all constructs were adapted from established and validated studies. The detailed dimensions and indicators are summarized in Table 1.

Data analysis was performed using Partial Least Squares–Structural Equation Modeling (PLS-SEM), as this analytical technique is particularly suitable for examining research

Table 1. Indicators Variabel

Variable	Main Dimensions	Example Indicators	Source
Financial Literacy	Service knowledge	Understand the main features of the FinTech services used	Lyons (2022), Trinh et al. (2022)
	Security and risks	Understanding security risks and data protection	Idrees & Ullah (2024)
	Business benefits	Understanding the benefits of FinTech for business management	(Chen *et al.*, 2023)
Trust	System reliability	FinTech services function consistently	Belanche et al. (2021), Jafri et al. (2024)
	Security	FinTech transactions feel safe	Dwivedi et al. (2022)
	Provider integrity	Trusted FinTech Provider	Jafri et al. (2024)
Perceived Risk	Financial risk	Potential financial losses from FinTech	(Marakarkandy, Yajnik and Dasgupta, 2021; Al-kasasbeh and Khasawneh, OhoudAlzghoul, 2023)
	Data risks data	Data misuse concerns	Dwivedi et al. (2022)
Entrepreneurial Intention	Business development intentions	Intention to expand business with FinTech support	Liñán & Fayolle (2022), Schlaegel et al. (2021)
	Sustainability intentions	Intention to continue using FinTech	Yang (2025)

models that incorporate latent variables as well as concurrent mediation and moderation effects (Hair *et al.*, 2021; Sarstedt *et al.*, 2022). Evaluations were conducted of both the outer (measurement) model and the inner (structural) model in order to assess the hypotheses formulated in this study.

Result and Discussion

Respondent Description

This research involved 210 MSMEs using FinTech operating in the Solo Raya and Yogyakarta Special Region areas. All respondents were owners or primary managers of their businesses. Based on gender, respondents consisted of 118 men (56.2%) and 92 women (43.8%). With respect to age, the largest proportion of respondents was in the 31–40 year age category (35.2%), followed by 41-50 years (29.5%), 21-30 years (22.9%), and over 50 years (12.4%), indicating a predominance of productive age. Based on educational background, the largest proportion of respondents had completed senior high school or equivalent education (45.7%) and Diploma/Bachelor (43.8%), while 10.5% had postgraduate education. Most respondents had been running their businesses for more than five years (61.0%), while 39.0% had businesses aged 1-5 years. The most widely used FinTech services are QRIS and digital wallets (77.1%), followed by mobile banking (59.0%) and digital financing/P2P lending (21.9%), indicating that FinTech is primarily used to support business transactions and liquidity.

Outer Loading Evaluation

The assessment of the measurement model was initiated by examining the outer loading values of all indicators. During the first round, the estimation results showed that several indicators had outer loading values below the threshold of 0.60, thus potentially reducing the validity of construct measurement. Referring to PLS-SEM guidelines, indicators with low outer loadings can be eliminated gradually as long as they do not conflict with the theoretical basis (Hair *et al.*, 2021). The eliminated indicators included EI1, EI7, FL3, PR3, PR5, PR6, PR7, and TR1. Re-estimation indicated that the remaining indicators all achieved outer loading values exceeding 0.60, thus meeting the indicator validity criteria and being retained in the measurement model.

Figure 2 presents the outer loading results of the indicators after two rounds of estimation. All retained indicators had outer loading values ≥ 0.60, indicating that they adequately represent the latent construct.

Reliability and Construct Validity

After the indicators were confirmed to be valid, construct reliability and validity were evaluated using Cronbach's Alpha, Composite Reliability, and Average Variance Extracted (AVE). The results show that all constructs have achieved Cronbach's Alpha and Composite Reliability coefficients exceeding 0.70. The values of AVE for FinTech Literacy (0.544), Trust (0.587), Perceived Risk (0.583), and Entrepreneurial Intention (0.557) constructs are above 0.50. Therefore, these constructs have met the criteria for convergent validity. Nevertheless, the AVE value of the moderating effect construct is lower; still, this is acceptable because the AVE values of interaction constructs are not mandatory (Hair *et al.*, 2021)

The outcomes of the construct reliability and validity assessments are presented in Table 2. All constructs meet the recommended thresholds for internal consistency and convergent validity in PLS-SEM analysis.

Discriminant Validity

Discriminant validity was assessed using the Fornell–Larcker approach. The findings indicate that the square root of the AVE for each construct was higher than its corresponding correlations with the other constructs. Thus, every construct demonstrated sufficient discriminant capability.

Table 3 provides an overview of the discriminant validity results using the Fornell-Larcker criterion, demonstrating that all constructs are empirically distinguishable from one another.

Structural Model Evaluation

The assessment of model fit revealed an SRMR value of 0.095, which is still considered acceptable in PLS-SEM research. The NFI score of 0.751 reflects a moderate degree of model fit, which is commonly observed in structural models that incorporate mediation and moderation complexity.

Table 4 presents the structural model fit indicators, indicating that the proposed research model demonstrates an acceptable degree of fit.

The R^2 value was used to evaluate the model's predictive ability. The analysis results showed that the Trust construct reported an R^2 value of 0.672, meaning that FinTech literacy explains 67.2% of the variance in trust. Meanwhile, the Entrepreneurial Intention construct had an R^2 value of 0.568,

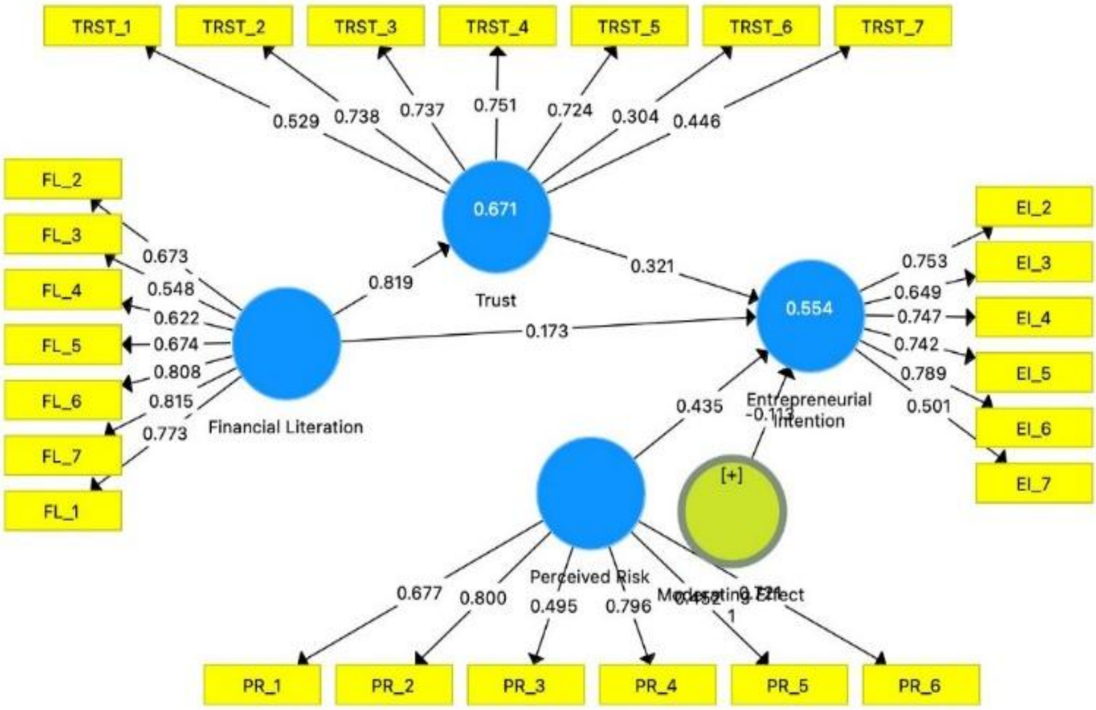

Figure 2. PLS-SEM Structural Model

Table 2. Average Variance and Composite Reability Extracted

	Cronbach's Alpha	rho_A	Composite Reability	Average Variance Extracted (AVE)
Entrepreneurial Intention	0.799	0.806	0.862	0.557
Financial Literacy	0.829	0.843	0.876	0.544
Moderating Effect 1	0.867	1.000	0.886	0.332
Perceived Risk	0.761	0.779	0.847	0.583
Trust	0.766	0.766	0.851	0.587

Table 3. Discriminant Validity Assessment Based on the Fornell-Larcker Criterion

	Entrepreneurial Intention	Financial Literacy	Moderating Effect 1	Perceived Risk	Trust
Entrepreneurial Intention	0.787				
Financial Literacy	0.574	0.847			
Moderating Effect 1	0.385	0.461	0.607		
Perceived Risk	0.671	0.503	0.623	0.818	
Trust	0.660	0.787	0.504	0.842	0.766

Table 4. Structural Model Fit Results

	Saturated Model	Estimated Model
SRMR.	0.079	0.095
d_ULS.	0.652	0.957
d_G.	0.270	0.314
Chi-Square.	352.817	379.226
NFI	0.768	0.751

indicating that the research model accounts for 56.8% of the variance in entrepreneurial intention.

Hypothesis testing

Hypothesis testing was performed using a bootstrapping procedure with 5,000 resamples. A summary of the hypothesis testing results is presented in Table 5.

From the results obtained from the structural model analysis, it can be concluded that the following main results were obtained on the inter-relationships among the investigated constructs. First, the results obtained from the analysis reveal the impact of fin-tech literacy on entrepreneurial intention, indicated by a path coefficient of β = 0.157 and a p-value equal to 0.086, higher than the 5% level. This finding confirms that fin-tech literacy does not have a significant impact on entrepreneurial intention. Hence, Hypothesis 1 is rejected. Second, the testing results indicate a positive and significant impact of fin-tech literacy on trust with a path coefficient equal to β = 0.820 and a p-value less than 0.001. This finding confirms the positive impact of fin-tech literacy on the level of trust among MSMEs. Hence, Hypothesis 2 is accepted. Third, the empirical results demonstrate a positive and significant association between trust and entrepreneurial intention, reflected by a path coefficient of β = 0.270 with a significance value of 0.004. Therefore, Hypothesis 3 is accepted. Fourth, testing the moderation effect shows that perceived risk significantly alters the magnitude of the association between trust and entrepreneurial intention, as reflected by a moderation coefficient of β = -0.159 with statistical significance at p = 0.019. The negative sign of this coefficient indicates that at higher levels of perceived risk, trust exerts a weaker effect on entrepreneurial intention. Thus, Hypothesis 5 is accepted with a negative moderation direction.

Testing the Mediation Effect

Testing for mediation effects was conducted through specific indirect effects analysis. The results showed that the indirect path from FinTech Literacy through Trust to Entrepreneurial Intention was found to be statistically significant (β = 0.221; p = 0.005).

Table 6 presents the results of the indirect effect

Table 5. Structural Path Coefficients and Hypothesis Testing Outcomes

	Original Sample (O)	Sample Mean	Standard Deviation	T Statistics	P Value
Financial Literacy-> Entrepreneurial Intention	0.157	0.151	0.091	1.721	0.086
Financial Literacy-> Trust	0.820	0.824	0.025	32.388	0.000
Moderating Effect -> Entrepreneurial Intention	-0.159	-0.132	0.068	2.350	0.019
Perceived Risk-> Entrepreneurial Intention	0.536	0.519	0.100	5.382	0.000
Trust-> Entrepreneurial Intention	0.270	0.277	0.094	2.860	0.004

Table 6. Indirect Effects Results

	Original Sample (O)	Sample Mean	Standard Deviation	T Statistics	P Value
Financial Literacy-> Trust -> Entrepreneurial Intention	0.221	0.228	0.079	2.808	0.005

(mediation)test, which shows that trust acts as a mediator in the relationship between FinTech literacy and entrepreneurial intention. Based on these results, it can be inferred that trust functions as a mediating mechanism linking FinTech literacy to entrepreneurial intention; therefore, H4 is accepted.

The results of this research demonstrate that FinTech literacy does not have a direct influence on entrepreneurial intention. These findings indicate that MSME actors' understanding of digital financial services has not automatically translated into technology-based entrepreneurial intentions. Theoretically, this result is aligned with the Theory of Planned Behavior (TPB), which emphasizes that knowledge or cognitive abilities are not direct determinants of intention, but rather work through other psychological mechanisms such as attitudes and subjective beliefs (Ajzen, 2020).

FinTech literacy in the MSME sector tends to be utilized at the operational level, such as facilitating transactions and financial recording, but has not yet been fully perceived as a strategic tool for business development. This finding is consistent with the research by Liñán & Fayolle (2022) which argues that entrepreneurial intentions are influenced by a more complex psychological evaluation process than just knowledge. Studies by Idrees & Ullah (2024), Trinh et al., (2022) also found that digital financial literacy frequently does not directly influence entrepreneurial intention in the absence of mediating factors. Thus, these research results strengthen the argument that FinTech literacy is a supporting condition, but not an immediate driver of entrepreneurial intention. Notably, the strength of this relationship ($\beta = 0.820$) indicates a substantially stronger effect compared to prior studies, suggesting that in MSME contexts within developing economies, trust formation is highly dependent on the level of FinTech literacy.

The empirical results indicate that FinTech literacy exerts a positive and significant effect on trust. This implies that the better MSMEs comprehend FinTech mechanisms, advantages, and risks, the more they trust the safety and reliability of digital financial services. These findings are consistent with the Technology Acceptance Model (TAM), which strongly argues that users' understanding of technology plays a pivotal role in shaping perceptions of technology's usefulness and trustworthiness of the system (Venkatesh et al., 2007). The findings of studies by Belanche et al. (2021), Dwivedi et al. (2022) also confirm that digital literacy is a key factor in developing trust, particularly in high-risk services like FinTech. A study carried out by Jafri et al. (2024) clearly illustrates that trust in FinTech can be easily developed among those users who are aware of the security features and data protection mechanisms. Therefore, FinTech literacy can be placed at the forefront of cognitive foundations for trust development among MSME actors.

The empirical findings indicate that trust positively affects entrepreneurial intention, confirming the central role of trust in driving technology-based entrepreneurial intentions. When MSMEs feel confident about the safety and reliability of FinTech, they are more motivated to integrate the technology into their business development strategies. This finding aligns with the TPB, which positions trust as an affective factor that influences attitudes toward behavior and strengthens intentions to act (Ajzen, 2020). Yang (2025) study showed that trust serves as an entry condition in FinTech adoption, while Belanche et al. (2021), Schlaegel et al. (2021) identified trust as a significant contributor to entrepreneurial intentions in a digital environment full of uncertainty. Therefore, trust can be viewed as a key psychological mechanism that drives the transformation of digital literacy and experience into entrepreneurial intentions.

The results further verify that trust operates as a mediating variable in the linkage between FinTech literacy and entrepreneurial intention. This result implies that FinTech literacy does not function directly, but rather through the formation of trust in digital financial systems and service providers. Conceptually, FinTech literacy increases the understanding and perception of control of MSME actors, but entrepreneurial intentions are only formed when this understanding produces a sense of security and trust. This result is consistent with prior evidence reported by Trinh et al. (2022), which show that trust acts as a transmission mechanism linking technological knowledge to behavioral intention.

A study by Jafri et al. (2024) also confirms that without trust, FinTech knowledge tends not to lead to continued usage intentions. Thus, trust functions as a psychological bridge that translates FinTech literacy into entrepreneurial intention. Given the non-significant direct effect and the significant indirect effect, this study confirms a full mediation mechanism. This implies that FinTech literacy influences entrepreneurial intention entirely through trust, representing a structural refinement of TPB in digital entrepreneurship contexts.

The findings of this study reveal that perceived risk plays a moderating role in the association between trust and entrepreneurial intention, with a negative direction. This implies that at elevated levels of risk, the positive effect of trust on entrepreneurial intention weakens. Theoretically, this finding aligns with risk theory in technology adoption, which states that trust and perceived risk have a counterbalancing relationship (Moncada *et al.*, 2025). When perceived risk is high, trust in the system is not always sufficient to drive behavioral intention. This finding positions perceived risk as a boundary condition that constrains the effectiveness of trust. Rather than acting merely as a complementary factor, perceived risk functions as a contextual inhibitor that weakens the translation of trust into entrepreneurial intention.

Empirical studies by Dwivedi et al. (2022) also show that financial risk and concerns over data security represent major barriers to the adoption of digital financial services. Thus, perceived risk acts as a contingency factor that limits the effectiveness of trust in driving entrepreneurial intention, particularly within MSMEs operating in developing country contexts. This finding challenges the dominant assumption in FinTech adoption literature that literacy directly drives entrepreneurial intention. It suggests that cognitive capability alone is insufficient unless supported by psychological mechanisms such as trust.

Conclusion

This study seeks to examine the effect of FinTech literacy on entrepreneurial intention in MSMEs, with trust as an intermediary variable and perceived risk as a moderator variable. The results revealed that FinTech literacy does not exert a direct effect on entrepreneurial intention, but instead influences it through the intermediary variable of trust. This finding reveals that FinTech literacy is not a strategic impetus for the development of business activities in MSMEs but is rather a cognitive foundation that must be mediated by psychological variables. Furthermore, the findings indicate that trust plays a significant role in encouraging entrepreneurial intention, thereby proving that belief in the security and reliability of FinTech services constitutes a prerequisite for MSMEs in adopting digital financial technology in their business activities and strategies. Moreover, the findings demonstrate that perceived risk moderates the impact of trust on entrepreneurial intention in a negative direction, which reveals that perceived risk can constrain the ability of trust to stimulate entrepreneurial intention.

Theoretically, this study extends the Theory of Planned Behavior by incorporating trust as a mediating psychological mechanism and introducing perceived risk as a boundary condition that shapes behavioral intention. Furthermore, this study integrates TPB and TAM into a conditional behavioral framework, offering a more comprehensive explanation of FinTech-based entrepreneurial intention in MSMEs.

From a managerial and policy perspective, the findings of this study highlight the need to provide MSMEs with FinTech literacy programs that not only address the use of FinTech but also address the need to increase the sense of security and trust of MSMEs. In this sense, it is necessary for FinTech service providers to improve the transparency, security, and protection of their systems to avoid the perceived risks that may affect the use of FinTech in the development of MSMEs. From a practical perspective, this study suggests the need for concrete policy interventions such as digital trust certification systems, standardized security labeling for FinTech services, and risk mitigation mechanisms including transaction protection or insurance schemes to enhance MSME confidence in using financial technology.

The limitations of this study namely, its cross-sectional design and geographically restricted sample limited to MSMEs in Solo Raya and the Special Region of Yogyakarta, suggest that future studies should use longitudinal research designs, increase the geographic scope of the study, and include other relevant variables to gain a more comprehensive understanding of MSMEs' entrepreneurial behavior in the digital financial era.The limitations of this study namely, its cross-sectional design and geographically restricted sample limited to MSMEs in Solo Raya and the Special Region of Yogyakarta, suggest that future studies should use longitudinal research designs, increase the geographic scope of the study, and include other relevant variables to gain a more comprehensive understanding of MSMEs' entrepreneurial behavior in the digital financial era.

Author contributions

This manuscript is the result of collaboration among all authors. Suryo Budi Santoso and Fatmah Bagis contributed to the conceptualization of the study. The research methodology was designed by Suryo Budi Santoso together with Herni Justiana Astuti. Data collection was carried out by Herni Justiana Astuti and Meydy Fauziridwan. Data analysis was conducted by Suryo Budi Santoso and Fatmah Bagis. The original draft of the manuscript was prepared by Suryo Budi Santoso, while the review and editing process was carried out by Fatmah Bagis and Herni Justiana Astuti. All authors have read and approved the final version of the manuscript for publication.

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