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Perceived Benefits and Risks Influencing Fintech Adoption and Sustainability Performance of Indonesian MSMEs

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ABSTRACT

This research explores the interrelationships between perceived benefits, perceived risks, fintech adoption, and sustainability performance among Indonesian MSMEs operating in environments characterized by economic disruption and technological uncertainty. Drawing on technology adoption perspectives, the study conceptualizes perceived benefits and perceived risks as key determinants shaping MSMEs' willingness to integrate fintech into financial and operational activities. **A quantitative methodology** was employed, and Partial Least Squares Structural Equation Modeling (PLS-SEM) was applied to analyze the structural relationships, including both direct and indirect effects, among the constructs. **The findings** demonstrate that perceived benefits significantly and positively influence fintech adoption, indicating that MSMEs are more likely to embrace digital financial technologies when they perceive improvements in transaction efficiency, accessibility, financial flexibility, and business management. Fintech adoption subsequently exerts a significant positive effect on sustainability performance, strengthening MSMEs' economic resilience, operational continuity, and social sustainability during periods of disruption. **Although perceived** risks encourage greater caution during the initial stages of fintech integration, their non-significant direct effect on long-term sustainability performance suggests that risk perceptions primarily shape adoption decisions rather than sustainability outcomes. **The study** highlights fintech adoption as a strategic mechanism that transforms digital financial value into organizational resilience and sustainable performance. These findings contribute to the fintech and MSME literature and offer actionable insights for policymakers, financial institutions, and digital innovators in building an inclusive and resilient MSME ecosystem.

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1. INTRODUCTION

The accelerated development of digital technologies has significantly reshaped business operations and has become particularly critical during times of economic crisis, when organizations encounter heightened market uncertainty, reduced consumer spending capacity, and increasing difficulties in managing financial resources. For MSMEs, digital technology adoption has shifted from being a complementary option to a strategic necessity for maintaining competitiveness, operational resilience, and business continuity [1, 2]. One of

the most significant innovations is fintech, which provides digital payment systems, electronic wallets, online lending, and application-based financial services [3]. In Indonesia, the rapid development of fintech, supported by increasing digital payment adoption and government initiatives for financial inclusion, offers MSMEs opportunities to improve transaction efficiency, accelerate working capital turnover, and expand market access [4].

However, fintech adoption among MSMEs remains heterogeneous as business owners weigh its benefits and risks [5, 6]. Perceived benefit reflects improvements in efficiency, convenience, financial transactions, and economic value, while perceived risk involves financial loss, data security, privacy, system reliability, and legal concerns [7]. Previous studies suggest that perceived benefit promotes adoption, whereas perceived risk may discourage it, although trust and transparency can mitigate these concerns [8–10]. Despite growing research, limited evidence examines how perceived benefit and risk influence fintech adoption and subsequently MSME sustainability performance, particularly during economic crises. This study addresses this gap by integrating these constructs within a PLS-SEM framework and positioning fintech adoption as an intermediary linking user perceptions to long-term sustainability outcomes, supporting SDG 10 through more inclusive access to digital financial services [11, 12].

In light of this, the present research investigates how perceived benefit and perceived risk influence fintech adoption and sustainability performance among Indonesian MSMEs navigating economic crisis conditions [13]. Employing a quantitative survey design together with Partial Least Squares Structural Equation Modeling (PLS-SEM), the study adds to existing scholarship by connecting fintech adoption to economic, social, and environmental dimensions of sustainability. Its findings carry practical value for fintech providers and policymakers seeking to build a digital ecosystem that is secure, inclusive, and sustainable, ultimately contributing to progress on SDGs 8, 9, and 10.

2. LITERATURE REVIEW

Fintech adoption enhances MSME competitiveness and sustainability through improved efficiency, financial access, transaction speed, and data-driven decision-making [14, 15]. Adoption is typically driven more by perceived benefit than by perceived risk, whose direct influence tends to be modest, while other factors such as financial literacy, trust, access to finance, perceived usefulness, and ease of use also play a role in shaping both adoption and performance outcomes. Even so, few studies have combined perceived benefit, perceived risk, fintech adoption, and MSME sustainability into a single analytical framework [16]. To address this gap, the present study explores the mechanism through which fintech adoption transforms perceived digital financial value into improved, sustainable MSME performance. [17, 18].

2.1. Consumer Behavior and fintech Adoption Theory

The theoretical foundation integrates the benefit–risk framework with fintech adoption, suggesting that MSMEs weigh expected benefits against perceived risks. Benefits include financial accessibility, efficiency, convenience, reduced information asymmetry, and lower costs, while risks involve cybersecurity threats, financial losses, system failures, privacy concerns, and limited legal protection [19, 20]. Adoption is also shaped by digital trust, financial literacy, and organizational readiness [7]. Evidence from QRIS adoption shows that convenience, efficiency, and ease of use encourage digital payment adoption, which enhances financial inclusion, resource efficiency, resilience, and long-term sustainability [21, 22]. Thus, perceived benefits and risks are key determinants of MSME fintech adoption and its sustainability outcomes.

2.2. Perceived Benefit

Perceived benefit can be understood as business owners' perception of the positive value, usefulness, and operational gains derived from adopting fintech technologies [23]. For MSMEs, it reflects the extent to which digital financial systems are perceived to improve business performance compared with conventional practices [24]. Key benefits include reduced transaction costs, automated financial records, convenient payments, fewer manual errors, and reduced reliance on cash, enabling MSMEs to allocate resources more efficiently toward business development [25, 26]. When entrepreneurs perceive substantial benefits, their motivation and readiness to replace conventional practices with digital financial solutions increase. Thus, perceived benefit represents an important determinant of fintech adoption and supports MSMEs in developing sustainable competitive advantages in increasingly digitalised markets [16].

2.3. Perceived Risk

Perceived risk refers to subjective perceptions of uncertainty and potential negative consequences associated with fintech adoption, including vulnerability to digital threats rather than objective technological risks. For MSMEs, key concerns include cybersecurity threats, fraud, data breaches, financial losses, system failures, and transaction disruptions that may affect customer satisfaction and business reputation. Limited digital literacy can further intensify these concerns among Indonesian MSMEs. Without adequate security, consumer protection, and technical assurance, perceived risk may become a psychological barrier to fintech adoption, encouraging businesses to retain conventional financial practices.

2.4. Fintech Adoption

Fintech adoption refers to the actual acceptance and integration of digital financial technologies into daily business operations [27]. Among Indonesian MSMEs, it includes QRIS, digital wallets, mobile banking, and other platforms that support transactions and working capital management [28]. These technologies enable cashless operations, faster transactions, improved customer service, real-time reporting, and systematic financial management [29]. Thus, fintech adoption represents a critical digital capability that enhances decision-making, organizational resilience, and sustainable business performance.

2.5. Sustainability Performance

Sustainability performance can be defined as an organization's effectiveness in delivering long-term economic outcomes while preserving operational stability, adaptability, and sustainable development amid economic challenges. For MSMEs, it encompasses economic, operational, and social dimensions, including financial stability, resource efficiency, adaptability, business continuity, and positive stakeholder relationships [30]. Accordingly, technological innovation such as fintech supports competitiveness, organizational resilience, and sustainable business performance by enabling MSMEs to respond to changing consumer preferences and technological developments [31].

3. RESEARCH METHODS

Describes the methodological procedures employed to obtain and analyse empirical evidence in accordance with the research objectives [32]. This section outlines the research design, data sources and collection procedures, population and sampling approach, measurement of research variables, and data analysis techniques used to examine the proposed relationships among the study constructs [33].

3.1. Research Design

To investigate how perceived benefit, perceived risk, fintech adoption, and sustainability performance are related among MSMEs in Indonesia, this research adopts a quantitative survey design [34]. Questionnaire-based data were gathered from respondents and subsequently tested statistically to determine whether the proposed hypotheses were supported. An explanatory design underpins the study, allowing it to trace the causal pathways through which perceived benefit and perceived risk shape fintech adoption, and how adoption in turn influences the sustainability performance of MSMEs [35].

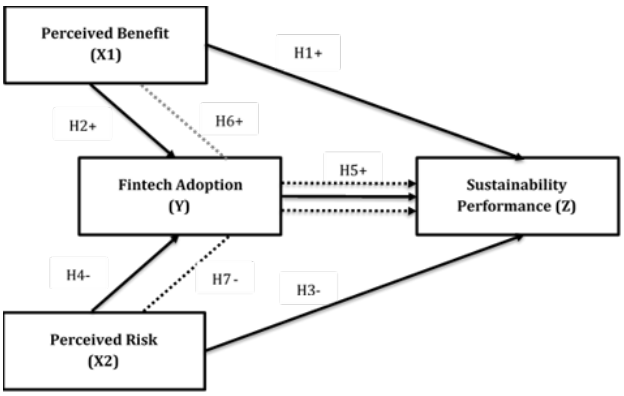

Figure 1. Research Design

- **H1**: An increase in Perceived Benefit contributes positively to Sustainability Performance.
- **H2**: Perceived Benefit exerts a positive influence on fintech Adoption.
- **H3**: Perceived Risk exerts a negative influence on Sustainability Performance.
- **H4**: Perceived Risk exerts a negative influence on fintech Adoption.
- **H5**: Fintech Adoption has a positive effect on Sustainability Performance.
- **H6**: Fintech Adoption positively mediates the relationship between Perceived Benefit and Sustainability Performance.
- **H7**: Fintech Adoption negatively mediates the relationship between Perceived Risk and Sustainability Performance.

The conceptual framework depicted in Figure 1 captures both the direct pathways from perceived benefit and perceived risk to fintech adoption and sustainability performance, as well as the intermediary function that fintech adoption itself plays within this relationship. By bringing these variables together into a single model, the framework builds on earlier work and offers a clearer picture of how fintech contributes to the long-term sustainability of MSMEs in Indonesia.

3.2. Research Setting and Timeline

This study involved Indonesian MSME actors who currently or previously used fintech services for business operations. Data were collected online through a Google Forms questionnaire from respondents across Indonesia, from questionnaire distribution until the required sample size was obtained.

3.3. Population and Sample

The population comprised MSME actors in Indonesia who use fintech services for operational and financial transactions. The sample consisted of MSME owners or managers who actively used fintech services for business transactions. Purposive sampling was employed based on the following inclusion criteria:

- Owning or managing an MSME
- Using fintech for business transactions
- Having used fintech for at least one year and
- Completing the questionnaire in full

Student respondents were eligible if they met the MSME ownership or management criteria and actively used fintech for business operations. Thus, they were considered MSME entrepreneurs rather than general student respondents. This approach ensured that participants had direct fintech experience relevant to the study variables.

3.4. Data and Data Sources

To ensure the empirical evidence gathered is thorough and the resulting findings hold up well, this research draws on two complementary types of data: primary and secondary. Primary data came directly from respondents who met the study's eligibility criteria, whereas secondary data were sourced from relevant academic literature and institutional publications, providing theoretical grounding and supporting the empirical analysis.

- Primary Data
  Primary data were collected directly through questionnaires distributed to eligible MSME actors. The data were used to empirically measure perceived benefit, perceived risk, fintech adoption, and sustainability performance.
- Secondary Data
  Secondary data were obtained from existing sources, including academic textbooks, peer-reviewed journals, research articles, government reports, Bank Indonesia and Financial Services Authority (OJK) publications, and other relevant literature on fintech and MSMEs.

4. RESULT AND DISCUSSION

This section reports the study's empirical results in a logical progression, starting with a profile of the respondents, followed by the assessment of both the measurement and structural models, and ending with the hypothesis testing findings. A more detailed discussion then follows, interpreting these results to clarify the interconnections among perceived benefits, perceived risks, fintech adoption, and the sustainability performance of MSMEs.

4.1. Empirical Data Analysis

Empirical data were analyzed using descriptive and inferential statistics to examine respondent characteristics and the relationships among research variables. Descriptive analysis summarized respondents' demographic profiles and fintech usage, providing a contextual basis for interpreting the empirical findings and assessing data suitability for the research objectives.

4.2. Respondent Profiles and Characteristics

Respondent characteristics included gender, age, education, occupation, and e-wallet usage duration. Primary data were collected through Google Forms from Indonesian MSME owners or operators who had used e-wallets for business transactions for at least one year.

Table 1. Respondents' Demographic Profiles ($N = 136$)

Characteristics	Category	Frequency	Percentage (%)
Gender	Male	51	37.50
	Female	85	62.50
	Total	**136**	**100.00**
Age	<25 years old	47	34.56
	25–35 years old	68	50.00
	36–45 years old	19	13.97
	>45 years old	2	1.47
	Total	**136**	**100.00**
Educational Attainment	High School / Vocational High School	80	58.82
	Associate Degree (D3)	14	10.29
	Bachelor's Degree (S1)	36	26.47
	Master's / Doctoral Degree (S2/S3)	6	4.41
	Total	**136**	**100.00**
Occupation	Student	48	35.29
	Entrepreneur / Self-Employed	41	30.15
	State-Owned Enterprise (BUMN) / Private Sector Employee	35	25.74
	Civil Servant (PNS)	12	8.82
	Total	**136**	**100.00**
E-Wallet Usage	Yes	134	98.53
	No	2	1.47
	Total	**136**	**100.00**
Duration of E-Wallet Usage	<1 year	9	6.62
	1–3 years	63	46.32
	4–6 years	51	37.50
	>6 years	13	9.56
	Total	**136**	**100.00**

Based on Table 1, the 136 respondents are predominantly female (62.50%) and aged 25–35 years (50.00%). Most respondents have a high school/vocational education (58.82%), with students (35.29%) and entrepreneurs/self-employed individuals (30.15%) representing the largest occupational groups. Nearly all respondents use e-wallets (98.53%), with the majority having used them for 1-3 years (46.32%), followed by 4-6 years (37.50%). These characteristics indicate that the sample largely consists of active fintech users with substantial e-wallet experience.

4.3. Characteristics of Research Variables

The constructs evaluated in this study comprise perceived benefit (X_1), perceived risk (X_2), fintech adoption (Y), and sustainability performance (Z). Each variable is operationalized through a set of measurement indicators adapted from prior literature and is assessed using a five-point Likert scale.

Table 2. Descriptive Analysis of Research Variables and Indicators ($N = 136$)

Variable	Indicator	Item	Indicator Mean	Variable Mean	Interpretation
Perceived benefit	Operational cost savings	PB1	4.25	4.28 (VG)	Very Good
	Transaction convenience	PB2	4.36		
	Revenue enhancement	PB3	4.19		
	Business financial management efficiency	PB4	4.30		
	Long-term benefits	PB5	4.29		
Perceived risk	Business financial data security	PR1	3.56	3.66 (G)	Good
	Identity misappropriation / theft	PR2	3.72		
	Monetary loss due to system failure	PR3	3.74		
	Weak legal protection	PR4	3.70		
	Concern that risks outweigh benefits	PR5	3.58		
Fintech adoption	Durability of access to fintech	FA1	4.14	4.15 (G)	Good
	User loyalty toward fintech platforms	FA2	4.20		
	Business dependence on fintech services	FA3	4.12		
	Continuity of future fintech utilization	FA4	4.13		
	Fintech recommendation to other MSMEs	FA5	4.14		
Sustainability performance	Fintech helps business survival in the long term	SP1	4.10	4.18 (G)	Good
	Business operational cost efficiency	SP2	4.17		
	Enhancement of customer relationship quality	SP3	4.18		
	Support for business economic sustainability	SP4	4.23		
	Enhancement of business adaptability to market shifts	SP5	4.22		

As shown in Table 2, sustainability performance comprises five indicators: long-term survival, cost efficiency, customer relationships, economic sustainability, and market adaptability. Perceived benefit scored 4.28 (very good), led by transaction convenience (4.36), while perceived risk scored 3.66 (good), led by monetary loss from system failure (3.74). Fintech adoption and sustainability performance scored 4.15 and 4.18 (good), with user loyalty (4.20) and economic sustainability support (4.23) as the highest indicators. Overall, fintech adoption supports MSME efficiency, resilience, and sustainability.

4.4. Measurement Model Evaluation (Outer Model)

The measurement model in this research is evaluated primarily to confirm that the indicators employed are valid and reliable. This evaluation proceeds systematically, taking into account convergent validity, discriminant validity, and the reliability of each construct.

Table 3. Outer Model

Variable	Item	Loading	Cronbach's α	CR	AVE	Interpretation
Perceived benefit	PB1	0.788	0.887	0.917	0.689	Valid & Reliable
	PB2	0.821				
	PB3	0.828				
	PB4	0.845				
	PB5	0.865				
Perceived risk	PR1	0.810	0.898	0.922	0.703	Valid & Reliable
	PR2	0.905				
	PR3	0.735				
	PR4	0.835				
	PR5	0.896				
Fintech adoption	FA1	0.836	0.880	0.912	0.676	Valid & Reliable
	FA2	0.795				
	FA3	0.849				
	FA4	0.838				
	FA5	0.791				
Sustainability performance	SP1	0.804	0.876	0.909	0.668	Valid & Reliable
	SP2	0.815				
	SP3	0.828				
	SP4	0.817				
	SP5	0.822				

As Table 3 demonstrates, every construct in this study meets the established thresholds for reliability and convergent validity. Indicator reliability holds up well, since all outer loading values sit above 0.70. The constructs also show sound internal consistency, reflected in Cronbach's Alpha scores of 0.876–0.898 and Composite Reliability scores of 0.909–0.922. AVE values likewise fall within an acceptable range of 0.668–0.703, comfortably clearing the 0.50 minimum and confirming convergent validity is adequate. Together, these results give solid grounds for treating the measurement model as both valid and reliable, supporting its use as the basis for the structural model analysis that follows.

4.5. Structural Model Evaluation (Inner Model)

The purpose of evaluating the inner model is to determine the extent to which the structural model succeeds in explaining and predicting how the study's variables are related to one another. To this end, the analysis systematically draws on both the coefficient of determination (R-Square) and the Effect Size (f^2).

Table 4. Structural Model Evaluation Results (Inner Model)

Endogenous Construct	R2 (Coefficient of Determination)	Q2 (Predictive Relevance)
Fintech adoption (Y)	0.447 (Moderate)	0.291 (Moderate)
Sustainability performance (Z)	0.610 (Moderate)	0.394 (Strong)

The structural model was evaluated using the coefficient of determination (R^2) and predictive relevance (Q^2). As reported in Table 4, fintech adoption (Y) has an R^2 of 0.447, indicating moderate explanatory power, with perceived benefit (X1) and perceived risk (X2) explaining 44.7% of its variance. Sustainability performance (Z) has an R^2 of 0.610, also indicating moderate explanatory power, with perceived benefit, perceived risk, and fintech adoption explaining 61.0% of its variance. Table 4 also shows Q^2 values of 0.291 and 0.394 for fintech adoption and sustainability performance, respectively, indicating moderate and strong predictive relevance. As both Q^2 values exceed zero, the structural model shows an acceptable level of predictive relevance for explaining the endogenous variables.

4.6. Hypothesis Testing Results

Hypothesis testing was conducted using the bootstrapping technique in SmartPLS to evaluate the statistical significance of the direct and indirect effects specified in the research model. The evaluation considered path coefficients (β), t-values, and p-values to determine the magnitude, direction, and significance of each hypothesized relationship. An effect was considered statistically significant when the t-value exceeded 1.96 and the p-value was below 0.05. This procedure provides a robust basis for assessing whether the empirical findings offer sufficient statistical evidence to support the proposed hypotheses.

Table 5. Hypothesis Testing Results

Structural Path	β	T Stat	P Values	Decision
Perceived benefit → *Fintech adoption*	0.588	7.797	< 0.001	H1 Supported
Perceived benefit → *Sustainability performance*	0.362	3.943	< 0.001	H2 Supported
Perceived risk → *Sustainability performance*	0.024	0.398	0.691	H3 Rejected
Perceived risk → *Fintech adoption*	0.193	3.050	0.002	H4 Rejected
Fintech adoption → *Sustainability performance*	0.487	4.896	< 0.001	H5 Supported
Perceived benefit → *Fintech adoption* → *Sustainability performance*	0.286	4.570	< 0.001	H6 Supported
Perceived risk → *Fintech adoption* → *Sustainability performance*	0.094	2.214	0.027	H7 Rejected

The results presented in Table 5 show that Perceived Benefit significantly affects fintech Adoption (β = 0.588; t = 7.797; p $<$ 0.001) and Sustainability Performance (β = 0.362; t = 3.943; p $<$ 0.001), supporting H1 and H2. Perceived Risk has no significant effect on Sustainability Performance (β = 0.024; t = 0.398; p = 0.691), leading to the rejection of H3. Although Perceived Risk significantly affects fintech Adoption (β = 0.193; t = 3.050; p = 0.002), the positive direction is inconsistent with the hypothesized negative relationship; therefore, H4 is rejected. Fintech Adoption significantly affects Sustainability Performance (β = 0.487; t = 4.896; p $<$ 0.001), supporting H5. The indirect effect of Perceived Benefit through fintech Adoption is significant (β = 0.286; t = 4.570; p $<$ 0.001), thereby supporting H6. In addition, a significant positive indirect effect of Perceived Risk on Sustainability Performance is observed via fintech Adoption (β = 0.094; t = 2.214; p = 0.027). Since this indirect effect runs positive rather than negative, contrary to what was hypothesized, H7 does not receive support.

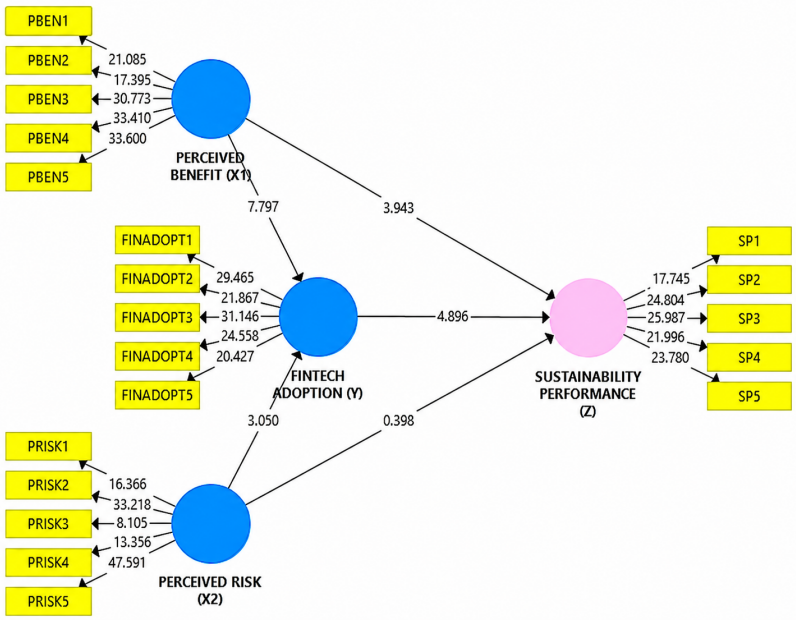

Figure 2. SmartPLS Bootstrapping Results of the Structural Model

Figure 2 presents the SmartPLS bootstrapping results, with path values representing t-statistics. The strongest relationship is between Perceived Benefit and fintech Adoption (t = 7.797), followed by fintech Adoption and Sustainability Performance (t = 4.896), while Perceived Risk has no significant direct effect on Sustainability Performance (t = 0.398). Overall, Perceived Benefit drives fintech Adoption, which subsequently enhances MSME Sustainability Performance, supporting the Net Valence Framework. Using PLS-SEM and SmartPLS, this study examines the effects of perceived benefit and perceived risk on fintech Adoption and their implications for MSME Sustainability Performance in Indonesia. The following discussion compares these empirical findings with the proposed hypotheses.

4.7. H1: The Effect of Perceived Benefit on Fintech Adoption

Fintech findings show a positive and significant effect of Perceived Benefit on fintech Adoption, confirming H1 (β = 0.588; t = 7.797; p $<$ 0.001). In practical terms, this means that as MSME owners perceive greater benefits, their willingness to adopt fintech grows correspondingly. Factors such as improved operational efficiency, reduced transaction costs, and simpler access to financial services all play a role in driving the uptake of digital fintech. This outcome lends support to the Net Valence Framework, which holds that people are more inclined to embrace a technology once its perceived benefits are seen to outweigh its perceived costs.

4.8. H2: The Effect of Perceived Benefit on Sustainability Performance

The findings confirm that Perceived Benefit has a positive and significant effect on Sustainability Performance, thereby supporting H2 (β = 0.362; t = 3.943; p $<$ 0.001). This result indicates that MSMEs perceiving greater value from fintech are more likely to achieve sustainable business performance through improved operational efficiency, financial management, and business productivity. The findings demonstrate that the benefits of digital fintech extend beyond technology adoption and directly contribute to organizational sustainability.

4.9. H3: Perceived Risk has a negative effect on Sustainability Performance

Perceived Risk is hypothesized to have a negative effect on Sustainability Performance. However, the empirical results indicate that Perceived Risk does not have a statistically significant effect on Sustainability Performance (β = 0.024; t = 0.398; p = 0.691). The positive but very small coefficient suggests that perceived risk has a negligible relationship with sustainability performance and does not provide sufficient statistical evidence to support the proposed negative effect. Therefore, H3 is rejected.

4.10. H4: Perceived Risk has a negative effect on Fintech Adoption

Perceived Risk has a negative effect on fintech Adoption. The results indicate that Perceived Risk has a significant positive effect on fintech Adoption (β = 0.193; t = 3.050; p = 0.002). However, because the observed effect is positive rather than negative as hypothesized, H4 is rejected.

4.11. H5: The Effect of Fintech Adoption on Sustainability Performance

According to the findings, fintech Adoption exerts a positive and significant influence on Sustainability Performance, in support of H5 (β = 0.487; t = 4.896; p $<$ 0.001). This suggests that MSMEs that embrace digital financial technologies stand a better chance of attaining sustainable business outcomes, driven by stronger financial management, greater operational efficiency, and improved business resilience. Taken together, the evidence points to fintech adoption as a strategically important lever for boosting organizational competitiveness while simultaneously supporting sustainability over the long run.

4.12. H6: The Mediating Role of Fintech Adoption in the Relationship between Perceived Benefit and Sustainability Performance

The results support H6 (β = 0.286; t = 4.570; p $<$ 0.001), showing that fintech Adoption The findings reveal that fintech Adoption positively transmits the effect of Perceived Benefit to Sustainability Performance, indicating that favorable perceptions of fintech benefits encourage adoption and subsequently reinforce MSME sustainability. Thus, adoption acts as a key mechanism translating favorable technology evaluations into sustainable outcomes, supporting the Net Valence Framework. The finding also aligns with [22], emphasizing that the sustainability benefits of fintech require actual adoption and implementation within MSME operations.

4.13. H7: The Mediating Role of Fintech Adoption in the Relationship between Perceived Risk and Sustainability Performance

The findings demonstrate that the indirect effect of Perceived Risk on Sustainability Performance through fintech Adoption is significant (β = 0.094; t = 2.214; p = 0.027). However, the effect occurs in a positive direction, indicating that higher perceived risk is associated with greater fintech adoption and subsequently improved sustainability performance. As this outcome contradicts the proposed negative mediating relationship, H7 is rejected.

5. MANAGERIAL IMPLICATIONS

Turning fintech adoption from a digital option into a strategic pathway for MSME sustainability represents the central managerial implication of this study. The findings demonstrate that Perceived Benefit is the strongest driver of fintech Adoption and also contributes directly to Sustainability Performance, while fintech Adoption significantly strengthens sustainable business outcomes. Accordingly, MSMEs should position fintech as a strategic business resource rather than merely a transactional tool by prioritizing applications that provide tangible improvements in financial management, transaction efficiency, accessibility, and operational productivity. At the same time, the positive relationship between Perceived Risk and fintech Adoption indicates that greater awareness of potential risks does not necessarily discourage adoption. Instead, MSMEs should strengthen their digital risk-management capabilities by selecting secure platforms, protecting financial information, and improving digital financial literacy. These capabilities can help MSMEs capture the benefits of fintech while maintaining business resilience and long-term sustainability.

For policymakers and fintech providers, the findings highlight the need to move beyond adoption-oriented initiatives toward value-oriented digital financial ecosystems that generate measurable and sustained benefits for MSMEs. Policymakers should strengthen digital and financial literacy, improve access to reliable digital infrastructure, and establish regulatory mechanisms that enhance security and user confidence. Fintech providers should develop affordable, secure, and user-centered solutions that are aligned with the operational realities and financial needs of MSMEs. Future research should examine whether the identified relationships remain consistent across different regions, business sectors, and economic conditions, particularly through longitudinal research designs and the inclusion of additional behavioral or organizational variables. Such efforts can provide a stronger evidence base for developing interventions that translate fintech adoption into sustained MSME development, business resilience, and long-term sustainability.

6. CONCLUSION

This research set out to explore how Perceived Benefit, Perceived Risk, fintech Adoption, and Sustainability Performance relate to one another among Indonesian MSMEs. Evidence gathered shows that Perceived Benefit exerts a positive and significant influence on both fintech Adoption and Sustainability Performance in other words, MSMEs that see clearer value in fintech tend both to adopt digital financial tools more readily and to experience better sustainability outcomes as a result. Fintech Adoption itself was also found to positively and significantly shape Sustainability Performance, underscoring its function as the channel through which the advantages of digital fintech translate into stronger financial management, greater operational efficiency, improved resilience, and ultimately sustainable performance. Of all the relationships tested, Perceived Benefit proved to have the strongest pull on fintech Adoption, pointing to how essential concrete technological value is in motivating MSMEs to take up fintech.

At the same time, Perceived Risk was not found to have a meaningful direct bearing on Sustainability Performance. It did, however, significantly affect fintech Adoption though in a positive rather than negative direction, which runs counter to what H4 predicted and thus leads to its rejection. Fintech Adoption was also confirmed as a significant mediator linking Perceived Benefit to Sustainability Performance, in line with H6. A comparable indirect pathway exists for perceived risk, its effect on Sustainability Performance via fintech Adoption is statistically significant and positive, but again this positive direction departs from the hypothesized negative mediation, so H7 is not supported. In this light, the rejections of H3, H4, and H7 stem not from a simple lack of statistical significance but from either an absent direct relationship or an empirical direction diverging from what was originally proposed.

Taken as a whole, the results underscore fintech Adoption's pivotal position in bridging how MSMEs perceive digital financial technologies and how sustainably they ultimately perform, while showing that perceived benefits track more reliably with positive adoption and sustainability outcomes than perceived risks do. These insights extend the Net Valence Framework by illustrating that perceived benefits and risks can steer behavioral and sustainability outcomes in different directions within the Indonesian MSME setting. Practically speaking, MSMEs would do well to prioritize fintech tools that deliver concrete gains in financial management, transaction efficiency, accessibility, and productivity, while simultaneously building up their digital risk-management capacity. Fintech providers and policymakers, for their part, can support this trajectory by offering secure, affordable, user-centered services, promoting digital and financial literacy, ensuring dependable digital infrastructure, and putting suitable regulatory frameworks in place. Collectively, such measures can help establish fintech as a strategic driver of resilient, sustainable MSME growth advancing SDG 8 (Decent Work and Economic Growth), SDG 9 (Industry, Innovation and Infrastructure), and SDG 10 (Reduced Inequalities).

7. DECLARATIONS

7.1. About Authors

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7.2. Author Contributions

Conceptualization: RW; Methodology: RW; Software: RW; Validation: RW and RW; Formal Analysis: RW and RW; Investigation: RW; Resources: RW; Data Curation: RW; Writing Original Draft Preparation: RW and RW; Writing Review and Editing: RW and RW; Visualization: RW; All authors, RW, have read and agreed to the published version of the manuscript.

7.3. Data Availability Statement

The data presented in this study are available on request from the corresponding author

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7.5. Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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