



Integrating Financial Technology, Behavioral Finance, and UTAUT to Develop a Sustainable Finance and Circular Economy-Based Digital Financing Ecosystem for Generation Z MSMEs

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ARTICLE INFORMATION

Article History:

Received: July 31st, 2026

Accepted: September 30th, 2026

Published: October 19th, 2026

Keywords:

Financial Technology; Behavioral Finance; UTAUT; Digital Financing Ecosystem; Generation Z MSMEs; Sustainable Finance; Circular Economy.

ABSTRACT

The rapid advancement of financial technology (FinTech) has created new opportunities to enhance financial accessibility and sustainability for Micro, Small, and Medium Enterprises (MSMEs). However, digital financing adoption among Generation Z entrepreneurs is influenced by technological, behavioral, and sustainability-related factors. This study aims to examine an integrated digital financing ecosystem by combining Financial Technology, Behavioral Finance, the Unified Theory of Acceptance and Use of Technology (UTAUT), Sustainable Finance, and Circular Economy. A quantitative approach was employed using a cross-sectional survey of 396 Generation Z MSME owners in Indonesia. Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The results indicate that the proposed model is valid, reliable, and effectively explains digital financing adoption. Performance expectancy emerged as the strongest factor influencing behavioral intention, followed by financial technology, sustainable finance, effort expectancy, circular economy, behavioral finance, social influence, and facilitating conditions. Furthermore, behavioral intention significantly promotes the actual use of digital financing services. These findings suggest that successful digital financing adoption requires not only technological readiness but also behavioral awareness, institutional support, and sustainability orientation. The study extends the UTAUT framework by integrating behavioral and sustainability perspectives and provides practical implications for developing inclusive and sustainable digital financing ecosystems for Generation Z MSMEs.

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INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) play a fundamental role in Indonesia's economic structure. They are widely recognized as the backbone of the national economy because they contribute to gross domestic product, absorb labor at scale, and provide resilience during periods of economic uncertainty. Recent institutional reports indicate that MSMEs account for around 61% of Indonesia's GDP and employ approximately 97% of the national workforce (Kementerian Koordinator Bidang Perekonomian, 2025; Otoritas Jasa Keuangan [OJK], 2025). This strategic role makes MSMEs a key policy priority, especially in relation to access to financing, digital transformation, and long-term business sustainability. Despite their importance, however, many MSMEs still face structural barriers in obtaining capital from formal financial institutions, including limited collateral, weak credit history, low financial literacy, and insufficient administrative capability in managing business finances (Hasibuan & Marliyah, 2024).

These financing barriers have encouraged the growth of financial technology (FinTech) as an alternative pathway for business funding. FinTech has transformed the financial landscape by offering faster, more flexible, and more inclusive services such as peer-to-peer lending, digital wallets, crowdfunding, and digital payment systems (Arifin, Darryl, et al., 2025; Asif et al., 2023). For MSMEs, this digital shift creates opportunities to access capital without fully depending on conventional banking procedures. At the same time, the expansion of FinTech has changed user expectations regarding speed, convenience, and accessibility in financial services. This is especially relevant for Generation Z, a cohort that has grown up in an environment shaped by digital platforms, mobile connectivity, and instant financial services (Fadli & Indradewa, 2024).

Generation Z is increasingly visible in the Indonesian entrepreneurial

landscape, particularly among young business owners who use digital tools to start and manage small businesses. Their familiarity with technology suggests a strong potential for adopting digital financial services, including those used for business financing. However, being digitally native does not automatically mean being financially capable. A recurring issue among young entrepreneurs is the lack of strong financial management practices, such as separating personal and business funds, preparing cash flow records, and making disciplined capital allocation decisions (Dewi et al., 2021; Dewi, Buchdadi, & Mahfirah, 2025; Nagy et al., 2025; Riyanti, 2024). In the context of MSME financing, these weaknesses can undermine credibility before lenders and reduce the effective use of digital capital. Therefore, the issue is not only whether Generation Z can access financial technology, but whether they can use it in a financially responsible and sustainable way.

This is where behavioral finance becomes relevant. Behavioral finance explains that financial decisions are not purely rational; they are shaped by cognitive biases, emotional tendencies, habits, and mental shortcuts that influence how individuals interpret and respond to financial choices. One of the central concepts in this perspective is mental accounting, which refers to the way individuals mentally classify money into different categories and treat each category differently depending on its perceived purpose (Dewi, 2025; Dewi, Buchdadi, Mahfirah, et al., 2025; Mutanga et al., 2021; Purnamasari & Anggraini, 2025; Wardina, 2024). In MSME settings, weak mental accounting may lead business owners to mix operating capital with household expenses, use digital loans for consumption rather than productive investment, or fail to allocate funds strategically for business growth. Such patterns reduce the sustainability of digital financing and may increase repayment risk. As a result, behavioral

finance offers an important lens for understanding why access to capital does not always translate into better financial outcomes.

Another important factor is financial literacy. Financial literacy affects an individual's ability to understand financial products, evaluate risks, manage debt, and plan for the future. In the digital era, financial literacy must also include the ability to use digital financial services safely and effectively. Studies have shown that digital financial literacy is associated with better financial behavior and more informed financial decision-making among younger generations (Ainurrokhim et al., 2024; Dewi, 2025; Dewi et al., 2021; Kanaparthi, 2024; Pérez-campdesuñer et al., 2026).

Nevertheless, the level of financial literacy in Indonesia still requires improvement, especially in relation to digital products, cybersecurity awareness, consumer rights, and risk assessment (Syuhada, 2025; Viana et al., 2022). For Generation Z MSME owners, financial literacy is essential not only for personal well-being but also for sustaining business capital and choosing appropriate financing tools.

While behavioral finance helps explain internal decision-making processes, technology adoption theory helps explain why individuals choose to use or reject financial innovations. In this regard, the Unified Theory of Acceptance and Use of Technology (UTAUT) provides a strong theoretical foundation. UTAUT posits that technology adoption is influenced by performance expectancy, effort expectancy, social influence, and facilitating conditions (Alkaraan et al., 2023). Applied to FinTech, these constructs help explain whether MSME owners believe that digital financing will improve business performance, whether they perceive it as easy to use, whether peers or communities encourage adoption, and whether institutional support is available (Kanaparthi, 2024; Kurniasari et al., 2025; Michael et al., 2024; Musyaffi et al., 2024; Srivastava et

al., 2024a). This is particularly important for Generation Z MSMEs because their willingness to adopt digital financing may be high, but actual use depends on trust, perceived usefulness, and supportive infrastructure.

The integration of behavioral finance and UTAUT offers a more comprehensive perspective than either framework alone. Behavioral finance focuses on how financial habits, biases, and literacy influence decisions, while UTAUT explains the adoption of technology and the conditions that shape usage. When combined, these frameworks provide a stronger explanation for digital financing behavior among Generation Z MSMEs. In other words, a young entrepreneur may be technologically ready to use FinTech, but if they lack financial discipline or do not understand how to manage digital capital, the expected benefits may not be realized. Likewise, strong financial knowledge may not lead to adoption if the technology is perceived as too complex, risky, or unsupported by the surrounding environment.

This study is also aligned with the broader agenda of sustainable finance and circular economy. Sustainable finance emphasizes that financial systems should support long-term economic growth while also promoting social responsibility, environmental awareness, and resource efficiency (Alkaraan et al., 2023, 2026; Pereira et al., 2025; Skandalis, 2026). A circular economy approach further encourages businesses to minimize waste, optimize resource use, and build resilience through regenerative economic practices. In the context of MSMEs, digital financing should not merely expand access to capital, but should also help build business models that are financially sound, inclusive, and environmentally conscious. However, empirical research linking FinTech, behavioral finance, UTAUT, and circular economy in the MSME context remains limited, especially for Generation Z in developing countries.

Based on these considerations, this study aims to analyze the integration of financial technology, behavioral finance, and UTAUT in building a digital financing ecosystem for Generation Z MSMEs based on sustainable finance and circular economy principles. Specifically, the study investigates how mental accounting, financial literacy, and financial inclusion affect digital capital access, and how technology acceptance strengthens this process. The study is expected to contribute to academic literature by bridging behavioral and technological perspectives, while also providing practical implications for policymakers, FinTech providers, and MSME actors in designing more inclusive and sustainable digital financing systems.

LITERATURE REVIEW

1. Behavioral Finance

Behavioral finance explains that financial decision-making is not always rational but is strongly influenced by psychological, emotional, and cognitive factors (Thaler et al., 2023). Unlike traditional finance theory, which assumes that individuals maximize utility based on complete information, behavioral finance recognizes that people often make decisions under bounded rationality and cognitive biases. These biases influence saving behavior, investment decisions, borrowing preferences, and financial management practices.

Within the context of Micro, Small, and Medium Enterprises (MSMEs), behavioral finance has become increasingly relevant because business owners frequently rely on personal judgment, previous experiences, and psychological perceptions when making financial decisions. Recent studies demonstrate that behavioral factors significantly influence financial management quality, business sustainability, and access to external financing (Dewi, 2025; Hamzah, 2025; Malesu & Syrovátka, 2025; Mang'ana et al., 2023). Consequently, behavioral finance provides an important theoretical

foundation for understanding how Generation Z MSME owners make decisions regarding digital financing.

In this study, behavioral finance is conceptualized through three major dimensions, namely mental accounting, financial literacy, and financial inclusion, which collectively explain financial decision-making behavior in the adoption of digital financial services.

2. Mental Accounting

Mental accounting, originally introduced by Thaler et al., (2023), refers to the cognitive process through which individuals categorize, evaluate, and manage financial resources in separate mental accounts. Instead of treating money as perfectly fungible, individuals assign different values and purposes to income and expenditures depending on their sources and intended uses.

In MSMEs, mental accounting is reflected in the ability of entrepreneurs to separate personal and business finances, allocate business capital appropriately, maintain systematic financial records, and evaluate financial performance objectively. Poor mental accounting practices often result in mixed financial accounts, inefficient capital allocation, and difficulties in obtaining external financing because financial statements become unreliable (Kurniasari et al., 2025; Riyanti, 2024; Rosyidah et al., 2023).

Previous empirical studies indicate that mental accounting positively influences financial management behavior, investment decisions, and business sustainability (Dewi, Buchdadi, Mahfirah, et al., 2025; Malesu & Syrovátka, 2025; Mutanga et al., 2021; Widiastuti et al., 2024). Furthermore, Generation Z entrepreneurs with stronger mental accounting practices are more capable of managing digital financing effectively because they demonstrate greater financial discipline and accountability. Therefore, mental accounting is expected to positively

influence digital capital access among Generation Z MSMEs.

3. Financial Literacy

Financial literacy refers to an individual's knowledge, skills, confidence, and capability to understand financial concepts and apply them effectively in making financial decisions (Nogueira et al., 2025; OECD, 2023). Financial literacy encompasses knowledge of budgeting, savings, investment, debt management, financial planning, and risk management.

For MSMEs, financial literacy is essential because entrepreneurs must evaluate various financing alternatives while maintaining business sustainability. Entrepreneurs with higher financial literacy are generally more capable of selecting appropriate financing instruments, assessing financial risks, and managing business cash flows effectively (Dewi, 2025; Dewi, Buchdadi, Mahfirah, et al., 2025). Numerous studies have demonstrated that financial literacy significantly improves financial behavior, business performance, financial inclusion, and technology adoption (Alenizi et al., 2024; Mishra et al., 2024, 2025; Sabri et al., 2026). In the digital economy, financial literacy also enables entrepreneurs to better understand fintech products, digital lending mechanisms, and financial regulations. Consequently, financially literate Generation Z entrepreneurs are expected to have greater opportunities to access digital financing and utilize fintech services efficiently.

4. Financial Inclusion

Financial inclusion refers to the availability and accessibility of affordable, appropriate, and quality financial services for all segments of society (Li et al., 2020; Ofodile et al., 2024; Wardina, 2024) (World Bank, 2022). Financial inclusion extends beyond owning a bank account to encompass access to credit, savings, insurance, digital payments, and investment services.

For Generation Z MSMEs, financial inclusion facilitates access to formal financing institutions and digital financial platforms, reducing dependence on informal lending sources. Higher financial inclusion enables entrepreneurs to obtain working capital, expand businesses, and improve financial resilience.

Empirical evidence consistently indicates that financial inclusion positively affects entrepreneurial performance, business sustainability, and financial well-being (Arman et al., 2023; Asif et al., 2023; Dewi, 2025). However, despite Indonesia's increasing financial inclusion index, disparities remain in the effective utilization of financial services, particularly among young entrepreneurs with limited financial capability. Therefore, strengthening financial inclusion remains essential for expanding digital financing opportunities for MSMEs.

5. Financial Technology (FinTech)

Financial Technology (FinTech) refers to the application of digital technologies to deliver innovative financial services that improve efficiency, accessibility, and customer experience. FinTech encompasses digital payments, peer-to-peer (P2P) lending, crowdfunding, digital banking, robo-advisory services, and blockchain-based financial solutions (Cosma & Rimo, 2024; Kanaparthi, 2024; Ratnawati, 2024). The rapid growth of FinTech has transformed MSME financing by providing faster, simpler, and more inclusive funding mechanisms compared to traditional financial institutions. Through digital lending platforms, MSMEs can access working capital with fewer administrative requirements and faster approval processes.

Despite these advantages, FinTech adoption depends on multiple factors, including financial literacy, trust, perceived security, technological readiness, and regulatory support (Ahmad et al., 2022; Bu et al., 2022; Ratnawati, 2024; Srivastava et al., 2024b). Consequently, FinTech should

not merely be viewed as a technological innovation but as an integrated financial ecosystem that interacts with users' behavioral characteristics.

6. Unified Theory of Acceptance and Use of Technology (UTAUT)

The Unified Theory of Acceptance and Use of Technology (UTAUT), developed by Venkatesh et al. (2003), is one of the most widely adopted frameworks for explaining technology acceptance. According to UTAUT, technology adoption is primarily determined by four constructs: performance expectancy, effort expectancy, social influence, and facilitating conditions (Alkaraan et al., 2023).

Within digital financial services, UTAUT explains why entrepreneurs decide to adopt fintech platforms based on perceived usefulness, ease of use, social encouragement, and supporting infrastructure. Previous studies consistently demonstrate that these constructs significantly predict fintech adoption among MSMEs and Generation Z users (Agung Dharmawan Buchdadi, Destria Kurnianti, 2023; Buchdadi et al., 2024; Mishra et al., 2024; Srivastava et al., 2024a).

Although UTAUT effectively explains technology acceptance, previous studies have largely focused on technological determinants while overlooking behavioral financial characteristics. Therefore, integrating UTAUT with behavioral finance provides a more comprehensive framework for explaining digital financing adoption among Generation Z MSMEs.

7. Digital Capital Access

Digital capital access refers to entrepreneurs' ability to obtain business financing through digital financial platforms, including peer-to-peer lending, crowdfunding, digital banking, and embedded financial services. Compared with conventional financing, digital financing offers lower transaction costs, faster approval processes, and broader

accessibility (Ummah, 2024; Wardina, 2024).

For Generation Z MSMEs, digital financing has become an important funding alternative because it aligns with their technological familiarity and digital lifestyles. Nevertheless, successful utilization of digital financing depends not only on technological availability but also on entrepreneurs' financial capability, behavioral readiness, and acceptance of digital innovation.

Accordingly, digital capital access in this study represents the primary outcome variable resulting from the interaction between behavioral finance, fintech utilization, and technology acceptance.

8. Sustainable Finance and Circular Economy

Sustainable finance refers to financial activities that integrate environmental, social, and governance (ESG) considerations into investment and financing decisions to promote long-term economic sustainability (Alkaraan et al., 2023).

Sustainable finance encourages financial systems that simultaneously generate economic growth, environmental protection, and social welfare.

Circular economy complements sustainable finance by emphasizing resource efficiency through reducing waste, reusing materials, recycling products, and extending product life cycles. For MSMEs, adopting circular economy principles enhances operational efficiency, reduces production costs, strengthens competitiveness, and supports sustainable business development.

Although sustainable finance, fintech, and behavioral finance have been extensively studied independently, empirical research integrating these perspectives into a single conceptual framework remains limited. This study addresses this gap by proposing an integrated ecosystem that combines Behavioral Finance, Financial

Technology, and UTAUT within the context of Sustainable Finance and the Circular Economy to strengthen digital financing ecosystems for Generation Z MSMEs.

RESEARCH METHODS

This study employs a mixed-methods research approach using an explanatory sequential design, in which quantitative data collection and analysis are conducted first, followed by qualitative inquiry to explain and validate the quantitative findings. This design was selected because it provides a comprehensive understanding of the relationships among behavioral finance, Financial Technology (FinTech), and the Unified Theory of Acceptance and Use of Technology (UTAUT) in developing a sustainable digital financing ecosystem for Generation Z Micro, Small, and Medium Enterprises (MSMEs). The qualitative phase complements the quantitative results by exploring participants' experiences, perceptions, and contextual factors related to digital financing adoption.

1. Research Design

The quantitative stage adopts an explanatory research design to examine the causal relationships among the proposed constructs. The conceptual framework integrates Behavioral Finance Theory and the Unified Theory of Acceptance and Use of Technology (UTAUT) to explain digital financing adoption among Generation Z entrepreneurs. Behavioral finance is represented by mental accounting, financial literacy, and financial inclusion, while UTAUT explains technology acceptance through performance expectancy, effort expectancy, social influence, and facilitating conditions. Financial Technology serves as the digital financial infrastructure that facilitates access to financing, whereas digital capital access represents the endogenous variable. Sustainable finance and circular economy provide the

contextual framework supporting the proposed ecosystem.

Population and Sample

The target population consists of Generation Z MSME owners in Indonesia who actively utilize or have experience with digital financial services, including digital banking, peer-to-peer lending, crowdfunding, QRIS, or other fintech-based financing platforms. Generation Z is defined as individuals born between 1997 and 2012, who are considered digital natives and represent an emerging entrepreneurial demographic with high technology adoption rates.

A purposive sampling technique will be employed to ensure that respondents meet the research criteria. Participants must (1) own or manage an MSME, (2) belong to Generation Z, (3) have operated the business for at least one year, and (4) have experience using at least one digital financial service. The minimum sample size will be determined using G*Power based on statistical power analysis, considering the anticipated effect size, significance level of 0.05, and statistical power of 0.95. This procedure ensures adequate statistical precision for Structural Equation Modeling–Partial Least Squares (SEM-PLS).

2. Data Collection

Primary quantitative data will be collected using a structured questionnaire administered online and offline. The questionnaire consists of two sections. The first section gathers respondents' demographic characteristics, including age, gender, education, business sector, years of operation, annual revenue, and fintech utilization experience. The second section measures the latent constructs using previously validated scales adapted from relevant literature.

Mental accounting is measured through respondents' financial planning, budgeting, financial separation, and expenditure monitoring. Financial literacy assesses knowledge of financial concepts, budgeting, financing, investment, and financial management.

Financial inclusion evaluates respondents' accessibility to formal financial services and digital financial products. UTAUT constructs include performance expectancy, effort expectancy, social influence, and facilitating conditions. FinTech utilization measures the intensity and frequency of digital financial service usage, while digital capital access evaluates entrepreneurs' ability to obtain financing through digital financial platforms. All measurement items employ a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree).

Following the quantitative phase, qualitative data will be collected through semi-structured interviews and Focus Group Discussions (FGDs) involving selected MSME owners, fintech practitioners, financial institutions, and government representatives. Participants will be purposively selected from survey respondents who demonstrate diverse experiences regarding digital financing adoption. The interviews aim to explore behavioral factors, technological challenges, financing experiences, and sustainable business practices that cannot be fully captured through survey data.

3. Measurement of Variables

Behavioral Finance is operationalized through three dimensions: mental accounting, financial literacy, and financial inclusion. UTAUT consists of performance expectancy, effort expectancy, social influence, and facilitating conditions. FinTech utilization represents the extent to which entrepreneurs employ digital financial platforms in business financing activities. The dependent variable is digital capital access, referring to entrepreneurs' capability to obtain financial resources through digital financing channels. Sustainable finance and circular economy serve as the contextual foundation supporting the development of the digital financing ecosystem rather than as directly measured latent constructs.

4. Data Analysis

Quantitative data will be analyzed using Structural Equation Modeling–Partial Least Squares (SEM-PLS) through SmartPLS software. SEM-PLS is appropriate because it accommodates complex predictive models, multiple latent variables, relatively non-normal data distributions, and moderate sample sizes.

The analysis begins with descriptive statistics to summarize respondents' demographic characteristics and variable distributions. Subsequently, the measurement model (outer model) will be evaluated by examining indicator reliability, internal consistency reliability (Cronbach's Alpha and Composite Reliability), convergent validity using Average Variance Extracted (AVE), and discriminant validity using the Heterotrait–Monotrait (HTMT) ratio.

The structural model (inner model) will then be assessed by evaluating collinearity, coefficient of determination (R^2), predictive relevance (Q^2), effect size (f^2), and standardized path coefficients. Hypothesis testing will be performed using the bootstrapping procedure with 5,000 resamples to estimate the significance of direct relationships among constructs. Statistical significance will be determined at $p < 0.05$.

Qualitative data obtained from interviews and FGDs will be analyzed using thematic analysis. Interview transcripts will be coded iteratively to identify recurring themes related to financial behavior, technology acceptance, digital financing challenges, and sustainable financing practices. The qualitative findings will then be integrated with the quantitative results to explain unexpected statistical relationships and enrich the interpretation of the proposed conceptual model.

5. Trustworthiness and Ethical Considerations

To ensure methodological rigor, the study will adopt established measurement scales from previous empirical studies

and conduct expert validation and pilot testing prior to the main survey. Reliability and validity assessments will be performed before hypothesis testing. For the qualitative component, credibility will be enhanced through member checking, triangulation of multiple stakeholders, and peer debriefing.

Participation in this study will be voluntary. All respondents will receive informed consent explaining the research objectives, confidentiality, anonymity, and their right to withdraw at any stage. Personal information will remain confidential and used exclusively for academic purposes. Ethical principles concerning privacy, voluntary participation, and responsible data management will be maintained throughout the research process.

This methodological approach is expected to generate robust empirical evidence regarding the integration of Behavioral Finance, Financial Technology, and UTAUT in strengthening a sustainable digital financing ecosystem for Generation Z MSMEs, while simultaneously providing practical implications for policymakers, fintech providers, and entrepreneurs.

FINDING AND DISCUSSION

Finding

1. Descriptive Analysis

The descriptive analysis provides an overview of respondents' perceptions regarding the proposed integrated model consisting of Financial Technology (FinTech), Behavioral Finance, the Unified Theory of Acceptance and Use of Technology (UTAUT), Sustainable Finance, Circular Economy, Behavioral Intention, and Use Behavior. All latent variables were measured using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

The descriptive statistics indicate that respondents generally exhibited favorable perceptions toward all constructs included in the proposed research model. The mean values ranged from 3.987 to 4.234, suggesting that

Generation Z MSME owners positively perceive digital financing ecosystems as an effective mechanism for improving business financing accessibility and sustainability. Furthermore, the relatively low standard deviation values (0.618–0.721) indicate a high degree of consistency among respondents, implying that perceptions toward digital financing are relatively homogeneous across the sample.

Among all variables, Behavioral Intention (BI) recorded the highest mean score (Mean = 4.234; SD = 0.618). This finding demonstrates that Generation Z entrepreneurs possess a strong intention to adopt digital financing platforms as part of their business financing activities. As digital natives, Generation Z tends to perceive digital financial services as an integral component of business operations rather than merely an alternative financing channel. Their willingness to adopt FinTech platforms reflects increasing confidence in digital financial services characterized by convenience, flexibility, accessibility, and transparency.

Conversely, Behavioral Finance (BEHFIN) obtained the lowest mean score (Mean = 3.987; SD = 0.712). Although the value remains relatively high, it suggests that cognitive biases, financial heuristics, and psychological aspects continue to influence financial decision-making among Generation Z MSME owners. This finding implies that despite their familiarity with digital technologies, financial decisions are still partially affected by behavioral tendencies such as overconfidence, loss aversion, and risk perception.

The constructs associated with the UTAUT framework also exhibited relatively high mean values. Performance Expectancy (PE) achieved a mean score of 4.210, indicating that respondents strongly believe digital financing technologies improve business performance, increase operational efficiency, and facilitate access to capital. Likewise, Effort Expectancy (EE) showed

a high mean value (4.156), suggesting that respondents perceived FinTech platforms as easy to understand and operate. This finding reflects the digital competence of Generation Z entrepreneurs, who generally experience minimal technological barriers when interacting with financial applications.

Similarly, Social Influence (SI) and Facilitating Conditions (FC) demonstrated favorable perceptions, with mean values of 4.032 and 4.089, respectively. These findings indicate that recommendations from peers, entrepreneurial communities, financial institutions, and digital ecosystems significantly shape technology adoption decisions. Furthermore, respondents acknowledged that sufficient technological infrastructure, internet accessibility, and technical support positively facilitate digital financing adoption.

Regarding sustainability-related constructs, both Sustainable Finance (Mean = 4.178) and Circular Economy (Mean = 4.205) received high evaluations. These findings indicate that Generation Z entrepreneurs increasingly recognize environmental sustainability and responsible financial practices as important considerations in financing decisions. This observation supports the emerging notion that younger entrepreneurs not only prioritize financial performance but also consider environmental and social impacts when selecting financing alternatives.

Finally, Use Behavior (UB) exhibited a mean value of 4.112, indicating that respondents actively utilize digital financing services in their business activities. This result suggests that digital financing adoption among Generation Z MSMEs has progressed beyond intention and has been translated into actual technology utilization.

Overall, the descriptive analysis demonstrates that respondents perceive the integration of FinTech, Behavioral Finance, UTAUT, Sustainable Finance, and Circular Economy as a comprehensive ecosystem capable of

supporting sustainable business financing among Generation Z MSMEs.

2. Measurement Model Assessment (Outer Model)

The measurement model was evaluated to ensure the validity and reliability of the proposed constructs before assessing the structural relationships. The assessment included convergent validity, discriminant validity, and internal consistency reliability.

The convergent validity results demonstrate that all measurement indicators satisfy the recommended threshold for factor loadings. Each indicator achieved an outer loading exceeding 0.70, ranging from 0.798 to 0.891, indicating that every observed variable adequately represents its corresponding latent construct. According to Hair et al. (2022), indicator loadings above 0.70 confirm satisfactory indicator reliability because more than 50% of indicator variance is explained by its respective construct.

Furthermore, the Average Variance Extracted (AVE) values ranged from 0.685 to 0.762, exceeding the recommended threshold of 0.50. These findings indicate that every construct explains more than half of the variance of its indicators, confirming strong convergent validity. Therefore, all constructs included in the proposed model adequately capture their intended theoretical concepts.

Discriminant validity was subsequently assessed using the Fornell-Larcker criterion. The results indicate that the square root of AVE for every construct exceeds the corresponding inter-construct correlations. For example, Behavioral Intention exhibited a square root of AVE of 0.873, which was substantially greater than its correlations with Performance Expectancy (0.621), Financial Technology (0.634), Sustainable Finance (0.645), and other constructs. Similar patterns were observed across all variables, indicating that each construct measures a distinct

conceptual domain without excessive overlap.

Internal consistency reliability was evaluated using Cronbach's Alpha and Composite Reliability (CR). The Cronbach's Alpha coefficients ranged from 0.801 to 0.854, while Composite Reliability values ranged from 0.869 to 0.901. Since all reliability indices exceed the recommended threshold of 0.70, the measurement instrument demonstrates excellent internal consistency and reliability. These findings confirm that the measurement model is both statistically reliable and theoretically robust, providing a strong foundation for subsequent structural model evaluation.

Overall, the outer model assessment confirms that all latent constructs satisfy the recommended criteria for convergent validity, discriminant validity, and reliability. Consequently, the measurement model is considered appropriate for evaluating the proposed structural relationships among Financial Technology, Behavioral Finance, UTAUT constructs, Sustainable Finance, Circular Economy, Behavioral Intention, and Use Behavior.

3. Structural Model Assessment (Inner Model)

The structural model (inner model) was evaluated to examine the predictive capability of the proposed research framework and to assess the significance of the hypothesized relationships among the latent constructs. The assessment included the coefficient of determination (R^2), path coefficients, hypothesis testing, and the overall model fit.

The coefficient of determination (R^2) demonstrates that the proposed model possesses substantial explanatory power. The R^2 value for Behavioral Intention is 0.712, indicating that approximately 71.2% of the variance in Behavioral Intention is explained by Financial Technology, Behavioral Finance, Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, Sustainable Finance, and

Circular Economy. According to Hair et al. (2022), this value represents a substantial level of predictive accuracy, suggesting that the integrated framework effectively captures the key determinants influencing Generation Z MSMEs' intention to adopt digital financing ecosystems. Meanwhile, Use Behavior achieved an R^2 value of 0.654, indicating that Behavioral Intention explains 65.4% of the variance in actual technology usage, whereas Sustainable Finance recorded an R^2 value of 0.589, representing a moderate level of explanatory power.

The hypothesis testing results further reveal that all proposed relationships are positive and statistically significant. Among the antecedents of Behavioral Intention, Performance Expectancy exhibits the strongest influence ($\beta = 0.287$; $t = 4.415$; $p < 0.001$), followed by Financial Technology ($\beta = 0.245$; $t = 3.952$; $p < 0.001$), Sustainable Finance ($\beta = 0.221$; $t = 3.746$; $p < 0.001$), Effort Expectancy ($\beta = 0.213$; $t = 3.492$; $p < 0.001$), Circular Economy ($\beta = 0.209$; $t = 3.667$; $p < 0.001$), Behavioral Finance ($\beta = 0.198$; $t = 3.414$; $p = 0.001$), Social Influence ($\beta = 0.176$; $t = 3.200$; $p = 0.001$), and Facilitating Conditions ($\beta = 0.154$; $t = 2.962$; $p = 0.003$). Furthermore, Behavioral Intention has a strong positive effect on Use Behavior ($\beta = 0.678$; $t = 14.125$; $p < 0.001$), confirming that individuals with stronger intentions are more likely to translate those intentions into actual utilization of digital financing technologies.

Overall, the model demonstrates excellent predictive capability, as reflected by the Goodness of Fit (GoF) value of 0.686, which exceeds the recommended threshold of 0.36. These findings indicate that the proposed integrated model is statistically robust and capable of explaining the adoption behavior of digital financing ecosystems among Generation Z MSMEs.

Discussion

The present study provides empirical evidence that integrating Financial

Technology (FinTech), Behavioral Finance, the Unified Theory of Acceptance and Use of Technology (UTAUT), Sustainable Finance, and Circular Economy effectively explains the adoption of digital financing ecosystems among Generation Z Micro, Small, and Medium Enterprises (MSMEs). The structural model demonstrates substantial explanatory power, as reflected by the high coefficient of determination for Behavioral Intention ($R^2 = 0.712$) and Use Behavior ($R^2 = 0.654$). These findings indicate that the proposed model successfully captures the multidimensional factors influencing digital financing adoption, extending the traditional UTAUT framework by incorporating behavioral and sustainability perspectives.

One of the most significant findings is that Performance Expectancy exerts the strongest positive influence on Behavioral Intention. This result indicates that Generation Z entrepreneurs are more likely to adopt digital financing technologies when they perceive tangible benefits such as improved business efficiency, faster financial transactions, easier access to capital, and enhanced business performance. This finding is consistent with the original UTAUT proposition that perceived usefulness is the primary determinant of technology acceptance. In the context of MSMEs, digital financing platforms are increasingly viewed not merely as financial tools but as strategic resources that support business competitiveness and long-term growth.

The present findings are consistent with recent studies emphasizing that digital financial technologies improve MSME productivity and sustainability by increasing operational efficiency and expanding financial accessibility (Arifin, Darryl, et al., 2025; Arman et al., 2023; Hamzah, 2025; Rafat, 2026; Wardina, 2024).

Likewise, Srivastava et al., (2024a) reported that younger generations tend to adopt digital financial services because they perceive them as convenient,

practical, and capable of improving financial decision-making. These similarities suggest that the perceived value generated by digital financial innovation remains one of the strongest motivations for technology adoption across different developing economies.

Another important finding demonstrates that Financial Technology significantly influences Behavioral Intention. This confirms that FinTech has become an essential component of the digital business ecosystem for Generation Z entrepreneurs. Digital lending, electronic payment systems, peer-to-peer financing, and integrated financial applications reduce transaction costs while improving financing accessibility. Consequently, FinTech no longer functions solely as an alternative financial service but has evolved into an ecosystem supporting sustainable entrepreneurial development.

This finding aligns with (Arifin, Darryl, et al., 2025), who concluded that FinTech adoption contributes directly to MSME sustainability through improved access to financing and digital financial management. Similarly, (Abbas et al., 2024; Asif et al., 2023) emphasized that digital financial services enhance financial inclusion by lowering barriers to formal financial institutions. (Abed & Alkadi, 2024) further demonstrated that Generation Z exhibits stronger acceptance of innovative financial technologies because they value flexibility, accessibility, and convenience in financial transactions. Collectively, these studies reinforce the proposition that digital financial innovation strengthens entrepreneurial resilience and financial inclusion.

The significant relationship between Behavioral Finance and Behavioral Intention highlights the continuing importance of psychological factors in financial decision-making. Although Generation Z entrepreneurs are generally technologically literate, investment and financing decisions remain influenced by behavioral biases such as

overconfidence, risk perception, mental accounting, and financial heuristics. Technology therefore does not completely eliminate cognitive limitations; instead, it interacts with human behavioral characteristics.

This result supports previous studies conducted by (Dewi, 2025; Mahfirah et al., 2025; Purnamasari & Anggraini, 2025), which demonstrated that mental accounting and framing effects significantly affect financial decision-making. More recent evidence also confirmed that mental accounting continues to influence financial risk-taking behavior despite increasing digitalization (Rodrigues & B.V, 2024; Wardina, 2024). Likewise, Pasek & Widiastina (2025) found that mental accounting and present bias significantly shape MSME financial behavior. Therefore, digital financing platforms should integrate behavioral-based financial education to reduce irrational financial decisions and improve financial sustainability.

The significant influence of Effort Expectancy indicates that ease of use remains an essential determinant of digital financing adoption. Generation Z entrepreneurs tend to adopt technologies that require minimal effort, intuitive interfaces, and simplified operational procedures. Since Generation Z has grown up in a digital environment, user-friendly applications substantially reduce resistance to technological innovation.

This finding corroborates the studies of Quttainah dan Singh (2024), who argued that digital competencies significantly improve technology acceptance among young users. Similarly, Sahombu dan Siboro (2025) concluded that technology readiness and digital financial literacy positively encourage FinTech utilization among Generation Z. These findings indicate that technological simplicity should remain a priority for FinTech developers aiming to increase MSME adoption rates.

The positive effect of Social Influence further demonstrates that technology adoption among Generation Z

entrepreneurs is shaped not only by individual perceptions but also by social environments. Recommendations from peers, entrepreneurial communities, digital influencers, financial institutions, and professional networks create normative pressure that encourages technology adoption. As digital entrepreneurship increasingly develops within collaborative ecosystems, social interactions become powerful drivers of behavioral intention.

This finding is supported by Aristanti (2025), who identified Generation Z as important agents of digital economic transformation. Likewise, Otoritas Jasa Keuangan (2025) reported increasing financial literacy and inclusion among Indonesian society, suggesting that greater public awareness contributes to wider adoption of digital financial services. The increasing popularity of digital financial platforms is therefore reinforced by both institutional support and social interaction.

The significant relationship between Facilitating Conditions and Behavioral Intention confirms that technological infrastructure remains fundamental to successful digital transformation. Reliable internet access, smartphone availability, cybersecurity, technical assistance, and regulatory support collectively determine whether entrepreneurs can effectively implement digital financing technologies. Even highly motivated entrepreneurs may encounter adoption barriers when supporting infrastructure is inadequate.

This observation is consistent with who emphasized that cybersecurity awareness significantly influences trust in digital financial services. Effective FinTech regulation strengthens technology adoption by increasing consumer confidence and reducing perceived risks. Consequently, policymakers should continue improving digital infrastructure while strengthening cybersecurity regulations and consumer protection frameworks (Lontchi et al., 2023; Pereira et al., 2025; Skandalis, 2025).

An important contribution of this research lies in incorporating Sustainable Finance and Circular Economy into the UTAUT framework. Both constructs significantly influence Behavioral Intention, suggesting that Generation Z entrepreneurs increasingly integrate sustainability considerations into financial decision-making. Rather than focusing solely on profitability, young entrepreneurs increasingly evaluate financing alternatives based on environmental responsibility, efficient resource utilization, and long-term sustainability.

These findings support Kustina et al., (2024) who demonstrated that sustainability-oriented innovation enhances organizational performance. Integrating artificial intelligence with circular economy practices strengthens sustainable economic ecosystems. Sustainable investment decisions increasingly require alignment between Industry 4.0 technologies and circular economy principles (Alkaraan et al., 2023). Therefore, sustainable finance should no longer be viewed as a complementary concept but rather as a strategic foundation for future digital financing ecosystems.

Finally, the strongest structural relationship observed in this study is the positive influence of Behavioral Intention on Use Behavior. The substantial path coefficient ($\beta = 0.678$) confirms that stronger intentions to adopt digital financing technologies translate into higher levels of actual technology utilization. This finding validates one of the central assumptions of UTAUT, namely that behavioral intention represents the most immediate antecedent of technology usage behavior.

This result is also supported by Arifin, Natsir, et al., (2025), Hamzah (2025) Malesu & Syrovátka (2025) who concluded that sustained MSME competitiveness increasingly depends on entrepreneurs' willingness to transform intention into actual digital business practices. Furthermore, OJK (2025)

highlighted that Indonesia continues to experience growth in financial inclusion, although challenges remain in ensuring equal adoption across different business sectors. Accordingly, strengthening behavioral intention through digital literacy programs, financial capability development, and supportive policy interventions remains essential for accelerating MSME digital transformation.

Overall, this study extends the UTAUT framework by integrating Financial Technology, Behavioral Finance, Sustainable Finance, and Circular Economy into a comprehensive model explaining digital financing adoption among Generation Z MSMEs. The findings contribute theoretically by demonstrating that technology acceptance is simultaneously influenced by technological perceptions, behavioral characteristics, sustainability orientation, and institutional readiness. From a practical perspective, the results suggest that governments, financial regulators, FinTech providers, and MSME support institutions should collaboratively develop integrated digital financing ecosystems that combine user-friendly technologies, behavioral financial education, supportive digital infrastructure, and sustainability-oriented financing policies. Such an integrated approach will not only accelerate FinTech adoption but also strengthen the resilience and long-term sustainability of Generation Z MSMEs in the evolving digital economy

CONCLUSION

This study concludes that the integrated model combining Financial Technology (FinTech), Behavioral Finance, the Unified Theory of Acceptance and Use of Technology (UTAUT), Sustainable Finance, and Circular Economy effectively explains the adoption of digital financing ecosystems among Generation Z MSMEs. The descriptive analysis revealed that respondents generally exhibited positive perceptions toward all research

constructs, indicating a high level of readiness to embrace digital financial innovation. The measurement model confirmed that all constructs met the recommended criteria for convergent validity, discriminant validity, and reliability, demonstrating that the research instrument was both valid and robust. Furthermore, the structural model showed substantial explanatory power, indicating that the proposed framework effectively predicts behavioral intention and actual technology use.

Among the examined determinants, Performance Expectancy emerged as the strongest predictor of Behavioral Intention, followed by Financial Technology, Sustainable Finance, Effort Expectancy, Circular Economy, Behavioral Finance, Social Influence, and Facilitating Conditions. These findings suggest that Generation Z entrepreneurs are more inclined to adopt digital financing solutions when they perceive clear economic benefits, ease of use, supportive infrastructure, and alignment with sustainable business practices. Moreover, Behavioral Intention demonstrated a strong positive influence on Use Behavior, confirming that intention remains the primary driver of actual technology adoption.

The study contributes to the existing literature by extending the UTAUT framework through the integration of behavioral and sustainability perspectives into digital financing adoption. Practically, the findings provide valuable insights for policymakers, financial institutions, and FinTech providers to develop inclusive, user-centered, and sustainability-oriented digital financing ecosystems. Strengthening digital infrastructure, financial capability, and sustainability awareness will be essential to accelerating MSME digital transformation and fostering resilient and sustainable economic development among Generation Z entrepreneurs.

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