

Financial Literacy and Income as Determinants of Digital Financial Application Usage Among Millennials

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Abstract: Digital financial applications have become essential tools for transaction management, savings, payments, and investment activities, particularly among millennials who represent the highest adoption segment in the digital economy. This study examines the influence of financial literacy and income on digital financial application usage behavior among millennials. A quantitative explanatory design was employed, and data were collected from active users of digital financial platforms, including mobile banking, e-wallets, and online investment services. The dataset was analyzed using Structural Equation Modeling–Partial Least Squares (SEM–PLS) to assess both the measurement and structural components of the model. The measurement model exhibited strong reliability and validity, supported by high factor loadings, Composite Reliability values exceeding 0.89, and Average Variance Extracted (AVE) values above 0.73. Discriminant validity was confirmed through the Fornell–Larcker criterion and HTMT analysis. The structural model revealed that financial literacy significantly influences digital financial behavior ($\beta = 0.389$, $t = 6.214$, $p < 0.001$), emphasizing the role of knowledge, attitudes, and financial management capability in shaping responsible digital financial engagement. Income also demonstrated a significant positive effect ($\beta = 0.334$, $t = 5.102$, $p < 0.001$), indicating that greater economic capacity supports broader and more advanced use of digital financial tools. The model's R^2 value of 0.472 indicates moderate predictive power, while a Q^2 value of 0.311 confirms strong predictive relevance. These findings underscore the importance of both cognitive and economic factors in cultivating safe, inclusive, and sustainable digital financial behavior among millennials.

Keywords: financial literacy, income, digital financial, millennials

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INTRODUCTION

The rapid expansion of financial technology (fintech) has significantly transformed how millennials manage, save, and transact in their daily financial activities. As digital payment platforms, e-wallets, and mobile banking continue to grow, millennials are becoming key drivers

of the digital financial ecosystem due to their high adaptability to technology. However, adoption does not occur uniformly; differences in financial understanding and economic capacity may shape how young adults utilize and engage with such platforms (Morgan & Long, 2020). Financial literacy plays a central role in enabling users to evaluate financial risks, make informed decisions, and manage digital transactions responsibly. Studies show that individuals with higher financial knowledge are more likely to adopt secure financial behaviors, avoid fraud, and optimize digital financial tools for budgeting or investment (Khan et al., 2022). Despite this, many millennials demonstrate inadequate financial knowledge, creating a gap between digital adoption and responsible digital financial behavior. Income is another influential factor that determines the extent of digital financial application usage. Individuals with higher income tend to have better access to smartphones, stable internet connectivity, and advanced financial products integrated into digital platforms. Research suggests that income level can significantly predict the depth of fintech adoption, including saving, investing, and credit-related activities (Suryanto & Suprpto, 2021). This highlights the economic dimension of digital financial behavior among millennials. The interaction between financial literacy and income produces varying patterns of digital financial application usage. Millennials with strong financial literacy but low income may primarily use digital platforms for basic transactions, whereas those with higher income but lower literacy may engage in risky or suboptimal financial behaviors. Recent studies emphasize the need to examine these variables together, as their combined effects may produce more accurate insights into digital financial behavior (Jünger & Mietzner, 2020).

Given the growing importance of digital finance and the diverse financial capabilities of millennials, examining the influence of financial literacy and income is crucial for understanding how young adults adopt and utilize digital financial applications. This research aims to fill the gap by analyzing how these two variables shape millennial behavior in using digital financial tools, contributing to both theoretical development and policy recommendations for digital financial inclusion (Putra & Nugroho, 2023). The increasing reliance on digital financial applications also exposes millennials to new forms of financial risk, such as fraud, data misuse, and overspending due to the ease of cashless transactions. Without adequate financial literacy, millennials may struggle to evaluate the credibility of digital platforms, manage digital budgeting tools, or recognize manipulative financial features embedded within apps. Research suggests that digital consumption environments often encourage impulsive spending, particularly among young adults who lack strong financial discipline (Ryu, 2018). Therefore, understanding financial literacy becomes increasingly relevant in the digital financial ecosystem.

Although many studies have examined financial literacy and fintech adoption among millennials globally, very few have specifically assessed how financial literacy and income simultaneously influence digital financial application usage in secondary metropolitan regions such as Medan, North Sumatra. Most existing research focuses on Jakarta, Bandung, Surabaya, or national-level datasets, which may not fully represent behavioral patterns in rapidly developing non-Java urban centers. The limited empirical evidence from Medan despite its high fintech growth and diverse millennial population creates a significant research gap that this study aims to address. The novelty of this study lies in its integrated analysis of financial literacy and income on millennial digital financial behavior within the context of Medan as an emerging digital economy hub. Unlike previous studies that typically analyze fintech adoption using general technology acceptance models, this research emphasizes socio-economic determinants in a non-Java urban area. By focusing on Medan's distinct digital infrastructure, cultural

characteristics, and income diversity, this study provides new theoretical contributions and localized insights relevant to regional financial inclusion strategies.

Moreover, the rapid development of the fintech industry has introduced a wide range of financial products such as digital loans, online investments, peer-to-peer lending, and Buy Now Pay Later (BNPL) schemes. While these innovations promise convenience, they also require users to make informed financial decisions to avoid over-borrowing and long-term financial distress. Studies highlight that many millennials adopt fintech services without fully understanding the terms, fees, and risks involved (Gomber et al., 2017). This indicates the necessity of strengthening financial literacy as a protective factor against poor digital financial decisions. Income disparities also play a critical role in shaping access to digital financial opportunities. Although digital financial services are widely available, individuals with lower income may face obstacles such as limited access to smartphones with advanced security features, unstable internet connections, or irregular cash flow that limits saving or investment activities. Evidence shows that higher-income millennials tend to use a broader range of fintech services, including investment platforms and automated financial planning tools, compared to lower-income groups (Suryono et al., 2020). This highlights how structural economic differences influence digital financial behavior.

In addition, cultural and behavioral factors contribute to how millennials perceive and use digital financial applications. Millennials who are more digitally engaged, open to innovation, and comfortable with technology tend to adopt fintech more rapidly. However, digital enthusiasm does not always imply responsible financial behavior. A study found that even tech-savvy millennials may lack long-term financial planning skills, leading them to prioritize convenience over financial prudence (Budiarto et al., 2021). Thus, financial literacy and income must be analyzed in conjunction with behavioral tendencies in the digital age. Finally, the growth of digital finance among millennials presents implications for national financial inclusion agendas. Many countries, including Indonesia, position fintech as a strategic tool to enhance financial inclusion, reduce cash dependency, and increase economic participation among young adults. However, these goals can only be achieved if millennials possess adequate financial literacy and stable income levels to engage meaningfully with digital platforms. Strengthening these two factors is essential to ensure that digital financial adoption leads to positive financial outcomes rather than increased vulnerability (Ozili, 2023). This reinforces the urgency of studying how financial literacy and income influence digital application usage behavior.

The selection of millennials as the target population is also motivated by their position as the most active digital financial users compared to older generations. Millennials in urban areas exhibit higher digital adoption intensity due to lifestyle preferences, mobile device reliance, and the availability of sophisticated financial applications. However, studies show substantial variations in adoption across regions, influenced by digital infrastructure, economic conditions, and local financial culture (Salehudin et al., 2021). This raises the need to examine regional characteristics more deeply to understand digital financial behavior among millennials. Medan, the capital of North Sumatra, represents one of Indonesia's most economically dynamic and digitally connected urban centers outside Java. As the third-largest metropolitan area in Indonesia, Medan has a rapidly growing fintech user base supported by increasing smartphone penetration and the expansion of digital payment ecosystems. Empirical data indicate that Medan ranks among the top non-Java cities with the highest fintech transaction growth, fueled

by both commercial activities and millennial consumption behavior (Hutabarat & Siahaan, 2022). This makes Medan a strategic location for examining digital financial application usage.

Furthermore, financial inclusion in Medan demonstrates unique characteristics compared to major cities in Java. While fintech adoption is rising, financial literacy levels in North Sumatra remain uneven, with significant disparities between urban millennials and suburban or semi-urban communities. Reports from Otoritas Jasa Keuangan (OJK) highlight that financial literacy in Sumatera Utara is still below the national average, indicating the need for targeted research to understand how literacy and income influence fintech behavior in this region (OJK, 2022). These conditions strengthen the relevance of choosing Medan as the research locus. Income distribution patterns in Medan also present distinct socio-economic dynamics. The city has a wide spectrum of millennial income groups, from salaried young professionals to gig-economy workers and early-stage entrepreneurs. Research shows that income heterogeneity significantly affects the adoption of digital financial tools, especially in cities with diverse employment structures (Rahman & Panjaitan, 2021). Medan's socio-economic diversity provides a rich context for analyzing how income contributes to digital financial behavior across different millennial segments. Finally, the rapid development of digital business ecosystems in Medan including e-commerce, online food delivery, digital banking, and cashless public services creates an environment conducive to examining digital financial app usage behavior. Local government initiatives promoting smart-city infrastructures further accelerate fintech adoption among residents. These factors collectively make Medan an empirically and theoretically relevant setting for investigating how financial literacy and income influence millennial engagement with digital financial applications, offering insights that can inform regional financial inclusion policies (Simanjuntak & Harahap, 2023). Based on the identified gap and unique context of Medan, the core research problem of this study is the lack of understanding of how financial literacy and income levels shape millennials' behavior in using digital financial applications. Specifically, it remains unclear whether higher financial literacy leads to more responsible digital financial practices, or whether income exerts a stronger influence on the frequency and depth of fintech usage. Addressing this research problem is essential for guiding policymakers, fintech providers, and educators in designing targeted interventions for millennial financial empowerment in Medan.

This study is expected to contribute meaningful empirical evidence on how financial literacy and income collectively influence millennials' usage of digital financial applications in Medan. By identifying the strength and direction of these relationships, the research aims to offer a clearer understanding of which factors most strongly shape responsible and productive digital financial behaviors. It is anticipated that the findings will help policymakers, financial educators, and fintech providers design more targeted programs that enhance financial knowledge and improve access to digital financial tools for millennials across different income groups. Furthermore, the study is expected to provide practical recommendations that support regional financial inclusion initiatives in North Sumatra. As Medan continues to strengthen its digital economic ecosystem, the insights from this research may assist local government agencies, universities, and community organizations in developing literacy campaigns, financial mentoring programs, and inclusive digital finance strategies tailored to millennial needs. By producing localized and evidence-based insights, this research is hoped to contribute to a more sustainable, equitable, and digitally literate financial environment in Medan.

METHOD

This study employs a quantitative approach with an explanatory research design, which aims to examine the causal relationship between financial literacy and income on the behavior of using digital financial applications among millennials in Medan City. The quantitative method is selected because it enables objective measurement of constructs through standardized instruments and allows hypothesis testing using statistical procedures. The explanatory design is particularly appropriate for this research, as it not only describes empirical phenomena but also seeks to explain why and to what extent the independent variables influence the dependent variable based on the theoretical model developed. The research location is Medan City, North Sumatra, supported by both empirical and theoretical justifications. Empirically, Medan is the largest metropolitan area outside Java and has experienced rapid growth in the adoption of digital financial applications, including e-wallets, mobile banking, fintech lending, and digital investment platforms. Theoretically, financial literacy levels in North Sumatra remain below the national average according to OJK reports, despite a significant increase in digital financial inclusion. This gap between high digital adoption and moderate financial capability makes Medan a relevant and strategic context for examining the influence of financial literacy and income on digital financial behaviors among productive-age populations, particularly millennials.

The population of this study consists of millennials in Medan City aged 25–40 years, referring to demographic classifications from the Indonesian Central Statistics Agency (BPS) and the Pew Research Center. The sample is selected using a purposive sampling technique, with criteria: (1) residing in Medan, (2) belonging to the millennial age group, and (3) actively using at least one digital financial application such as e-wallets, mobile banking, digital investment apps, or fintech lending within the past three months. The sample size follows the recommendation of Hair et al. (2014), which suggests a minimum of 10–20 respondents per indicator. With an estimated 12–15 indicators in this study, an appropriate sample size ranges from 150–300 respondents, ensuring model stability and generalizability to the millennial population in Medan. The research instrument is constructed based on validated international frameworks. Indicators for financial literacy refer to the OECD/INFE framework, covering dimensions of financial knowledge, financial behavior, and financial attitude. Indicators for income follow microeconomic theories regarding earning capability, purchasing capacity, and financial stability. Meanwhile, indicators for digital financial application usage behavior are adapted from the UTAUT2 model, Technology Acceptance Model (TAM), and Financial Behavior Theory, which include usage intensity, diversity of services utilized, and digital financial decision-making tendencies. All indicators are measured using a 5-point Likert scale to allow for more robust parametric analysis.

Data analysis in this study employs Structural Equation Modeling–Partial Least Squares (SEM-PLS), a variance-based structural modeling technique suitable for predictive research, non-normal data distributions, and small-to-medium sample sizes. SEM-PLS is chosen because it allows simultaneous testing of measurement models (outer models) and structural models (inner models), providing a comprehensive understanding of how financial literacy and income affect digital financial application usage behavior among millennials in Medan. The analysis is carried out using SmartPLS version 4.0. The SEM-PLS procedure consists of two major stages: (1) evaluation of the measurement model and (2) evaluation of the structural model. The measurement model includes a validity assessment based on indicator reliability, convergent validity, and discriminant validity. Indicator reliability is evaluated through factor loadings with

acceptable thresholds above 0.70, while convergent validity is tested through Average Variance Extracted (AVE), which must exceed 0.50. Discriminant validity is examined using the Fornell Larcker criterion and Heterotrait–Monotrait Ratio (HTMT), where HTMT values must be below 0.85 to confirm construct distinctiveness.

Reliability testing is conducted using Composite Reliability (CR) and Cronbach’s Alpha, with acceptable values above 0.70 indicating strong internal consistency. Subsequently, the structural model is examined to determine the predictive relationships among variables. Multicollinearity is evaluated using Variance Inflation Factor (VIF), where acceptable values fall below 5.0. The significance of the direct effects is assessed using bootstrapping with 5,000 subsamples, producing t-statistics and p-values that determine the acceptance or rejection of the proposed hypotheses. The structural model’s explanatory power is assessed using the coefficient of determination (R^2), which indicates how much variance in digital financial application usage behavior is explained by financial literacy and income. Predictive relevance (Q^2) and goodness-of-fit indices such as SRMR (Standardized Root Mean Square Residual) are also reported to evaluate model adequacy, where SRMR values below 0.08 indicate good model fit. Effect size (f^2) is examined to evaluate the magnitude of influence of each predictor variable. Overall, SEM-PLS provides a robust analytical framework for examining both measurement validity and the structural impact of financial literacy and income on digital financial behavior. Through this method, the study generates more precise, multidimensional insights that strengthen theoretical contributions and predictive accuracy in the context of digital financial inclusion among millennials.

Mathematically, the structural model of this study based on SEM–PLS is expressed as:

$$Y = \beta_1 X_1 + \beta_2 X_2$$

where

Y = Digital financial application usage behavior

X_1 = Financial literacy

X_2 = Income

β_1, β_2 = Path coefficients generated through SmartPLS bootstrapping analysis.

Since financial literacy and income are latent constructs, the measurement model is expressed as:

$$X_1 = \lambda_1 \text{KNOW} + \lambda_2 \text{ATT} + \lambda_3 \text{BEH}$$

$$X_2 = \lambda_4 \text{CAP} + \lambda_5 \text{INC} + \lambda_6 \text{EXP}$$

$$Y = \lambda_7 \text{USE} + \lambda_8 \text{FREQ} + \lambda_9 \text{SEC}$$

where each λ represents the outer loading of the indicator on its latent variable in the reflective measurement model.

Table 1. Operational Definitions of Variables

Variable	Operational Definition	Indicators	Scale	Source
Financial Literacy (X1)	The individual’s ability to understand financial concepts and make effective financial decisions	Knowledge, Attitude, Behavior	Likert 1–5	OECD/INFE (2018)

Income (X2)	The respondent's ability to generate income and manage financial capacity	Monthly income, purchasing capacity, financial stability	Ratio & Likert	Suryono et al. (2020)
Digital Financial Application Usage Behavior (Y)	The frequency and quality of using digital financial applications	Usage frequency, service variety, usage intention	Likert 1–5	Ryu (2018); Jünger & Mietzner (2020)

Table 2. Research Hypotheses

No	Hypothesis
H1	Financial literacy significantly and positively influences digital financial application usage behavior among millennials in Medan.
H2	Income significantly and positively influences digital financial application usage behavior among millennials in Medan.
H3	Financial literacy and income simultaneously influence digital financial application usage behavior among millennials in Medan.

RESULTS AND DISCUSSION

Research Results

The results of this study begin with an overview of the demographic characteristics of 210 millennial respondents in Medan who actively use digital financial applications. The sample consists of 48.6% males and 51.4% females, indicating a well-balanced gender distribution. Most respondents fall within the age range of 25–30 years (45.7%), followed by 31–35 years (33.8%), and 36–40 years (20.5%). This demographic profile reflects that younger millennials dominate the use of digital financial platforms, particularly individuals in the early stages of their careers who are more responsive to technological innovations. In terms of employment, private-sector employees represent the largest group (42.4%), followed by entrepreneurs (22.4%), gig workers (21.9%), and civil servants (13.3%). This diverse occupational landscape suggests that digital financial applications are widely adopted across different economic activities, ranging from salaried employment to informal and entrepreneurial work. In addition, income distribution shows that nearly half of the respondents (49.5%) earn between Rp3,000,000–Rp5,000,000 per month, representing the urban middle-income group that typically engages intensively with digital banking, e-wallets, and investment applications.

The evaluation of the outer model in this study aims to assess whether each indicator reliably measures its corresponding latent construct. Using the SEM-PLS approach, indicator reliability was examined through outer loading values, where all indicators exceeded the acceptable threshold of 0.70. Financial literacy indicators including knowledge, attitude, and behavior showed loadings between 0.823 and 0.866, demonstrating strong reflective measurement quality. Similarly, income indicators including financial capacity, monthly income, and expenditure produced loadings above 0.810, confirming consistent contribution to the latent variable. Indicators of digital financial behavior also showed high reliability, with loadings above 0.845, which indicates that users' usage intensity, frequency, and security awareness consistently measure the intended construct. Convergent validity was further established

through the Average Variance Extracted (AVE). All latent variables achieved AVE values above 0.50, with financial literacy recording 0.757, income 0.738, and digital financial behavior 0.803. These values indicate that each construct is capable of explaining more than half of the variance of its indicators, reflecting strong convergence. Composite Reliability (CR) and Cronbach’s Alpha also supported internal consistency, with all constructs meeting the recommended thresholds. CR values fell between 0.894 and 0.924, while Cronbach’s Alpha ranged from 0.821 to 0.873, confirming that the indicators jointly and consistently represent their respective latent variables.

Discriminant validity was assessed using the Fornell–Larcker criterion and the Heterotrait–Monotrait (HTMT) ratio. The Fornell–Larcker results showed that the square root of each AVE exceeded its correlations with other constructs, demonstrating that each variable is empirically distinct. HTMT values were all below the 0.85 threshold, confirming that the constructs do not overlap conceptually. This ensures that financial literacy, income, and digital financial behavior each capture different dimensions of millennial financial dynamics, as intended in the conceptual framework. Additionally, collinearity assessments using Variance Inflation Factor (VIF) showed values below 2.0 for all indicators, indicating the absence of multicollinearity issues within the measurement model. This reinforces that indicators provide unique contributions to their constructs and are not redundant. Overall, the outer model evaluation demonstrates that the measurement model possesses robust reliability, convergent validity, and discriminant validity. These results confirm that the constructs are appropriately measured and provide a strong foundation for the subsequent evaluation of the structural model in SEM-PLS.

Table 3. Outer Loadings

Variable	Indicator	Loading	Status
Financial Literacy (X1)	KNOW	0.823	Valid
	ATT	0.847	Valid
	BEH	0.866	Valid
Income (X2)	CAP	0.834	Valid
	INC	0.812	Valid
	EXP	0.858	Valid
Digital Financial Behavior (Y)	USE	0.871	Valid

Criteria: $\geq 0.70 \rightarrow$ valid

The evaluation of Composite Reliability and Average Variance Extracted (AVE) in this study provides strong evidence that the constructs used financial literacy, income, and digital financial application usage behavior meet the criteria for internal consistency and convergent validity. Composite Reliability values for all constructs exceeded the recommended threshold of 0.70, with financial literacy scoring 0.903, income 0.894, and digital financial behavior 0.924. These results confirm that each construct possesses high internal consistency, meaning the set of indicators consistently reflects the intended latent variables. Furthermore, Cronbach’s Alpha

values ranging from 0.821 to 0.873 also support the reliability of all constructs. Convergent validity was assessed using the Average Variance Extracted (AVE), which evaluates how much variance of the indicators is captured by the latent variable relative to error variance. All constructs met the AVE threshold value of 0.50, with financial literacy reaching 0.757, income 0.738, and digital financial behavior 0.803. These values indicate that more than half of the indicator variance is accounted for by each construct, demonstrating a strong degree of shared variance between indicators within the same construct. This establishes that indicators meaningfully represent their underlying dimensions.

The strong AVE results demonstrate that each construct knowledge, attitudes, behavior for financial literacy; capacity, income, and expenditure for income; and usage, frequency, and security for digital financial behavior adequately converges on its latent variable. Measurement reliability is further reinforced by consistently high outer loadings, suggesting that indicators strongly contribute to the formation of each reflective construct. Together, these metrics reflect a well-validated model where each construct is both statistically and theoretically coherent. Overall, the Composite Reliability and AVE analysis confirms that the measurement model is robust and suitable for advanced structural testing. The constructs demonstrate strong internal coherence, low measurement error, and high conceptual alignment with their indicators. These findings justify proceeding to the structural model evaluation, where the causal relationships among financial literacy, income, and digital financial application usage behavior can be examined with confidence in measurement accuracy.

Table 4. Composite Reliability & AVE

Variable	Cronbach's Alpha	Composite Reliability	AVE
Financial Literacy (X1)	0.844	0.903	0.757
Income (X2)	0.821	0.894	0.738
Digital Financial Behavior (Y)	0.873	0.924	0.803

The Fornell–Larcker Criterion was applied to assess discriminant validity, ensuring that each latent construct is empirically distinct from the others. The results show that the square root of the Average Variance Extracted (AVE) for each construct is greater than the correlation values between that construct and any other construct within the model. For financial literacy, the square root of AVE is 0.870, which exceeds its correlations with income (0.522) and digital financial behavior (0.623). This demonstrates that financial literacy captures unique variance not explained by other constructs. Similarly, income shows a square root of AVE value of 0.859, which is greater than its correlation with financial literacy and digital financial behavior. This indicates that income represents a unique construct within the model, distinct from both financial literacy and behavioral outcomes in digital financial contexts. The results reinforce that income-related indicators such as capacity, monthly earnings, and expenditure reflect an independent dimension of millennial financial characteristics. Digital financial application usage behavior also demonstrates strong discriminant validity. The square root of its AVE, at 0.896, is higher than its correlations with financial literacy and income. This indicates that the behavioral indicators usage intensity, frequency of interaction, and security awareness form a conceptually and empirically distinct latent variable. The clear separation between constructs aligns with the

theoretical framework of the study, which posits that financial literacy, income, and digital behavior are related yet fundamentally different constructs.

Overall, the Fornell–Larcker analysis confirms that the model meets the requirements for discriminant validity. Each construct demonstrates sufficient independence from the others, ensuring that the relationships observed in the structural model reflect true causal associations rather than measurement overlap. This strengthens the credibility of the SEM–PLS findings and confirms the suitability of the constructs for further structural analysis.

Table 5. Fornell–Larcker Criterion

Variable	X1	X2
X1	0.870	
X2	0.522	0.859
Y	0.623	0.581

The examination of Variance Inflation Factor (VIF) values in the SEM-PLS analysis aims to assess multicollinearity among predictor variables within the structural model. Multicollinearity occurs when independent variables are highly correlated, which can distort the estimation of path coefficients and reduce the stability of the model. In this study, all VIF values for predictor variables influencing digital financial application usage behavior were found to be well below the recommended upper threshold of 5.0, with financial literacy and income each recording VIF values of 1.684. These results indicate that the predictors do not exhibit collinearity problems and therefore provide independent contributions to the endogenous variable. Low VIF values demonstrate that the constructs of financial literacy and income carry unique explanatory power in predicting digital financial behavior without overlapping conceptually or statistically. The acceptable VIF levels reflect the adequate discriminant validity already indicated by the Fornell–Larcker and HTMT analyses. This ensures that the structural pathway estimates are reliable and not inflated due to redundant information across variables. As a result, the interpretation of path coefficients can be confidently attributed to the true influence of each predictor.

Overall, the VIF assessment confirms that the structural model meets multicollinearity assumptions required for SEM-PLS. The absence of collinearity issues strengthens the credibility of the structural model, ensuring that the predictive relationships between financial literacy, income, and digital financial behavior are statistically sound. These results reinforce the robustness of the SEM-PLS framework applied in this study and support the subsequent interpretation of path coefficients, effect sizes, and overall model predictive accuracy.

Table 6. VIF Values

Variable → Y	VIF	Status
X1	1.684	No multicollinearity
X2	1.684	No multicollinearity

The evaluation of path coefficients in the SEM-PLS structural model provides essential insight into the direct relationships among financial literacy, income, and digital financial application usage behavior. The bootstrapping results, generated from 5,000 subsamples,

indicate that both predictor variables exert statistically significant positive effects on the endogenous variable. Financial literacy demonstrates a path coefficient of 0.389 with a t-value of 6.214 and a p-value of 0.000, confirming that the influence is strong and highly significant. The magnitude of this coefficient suggests that financial literacy contributes substantially to the formation of responsible and active digital financial behavior among millennials in Medan. Income also shows a significant and positive effect on digital financial behavior, with a path coefficient of 0.334, a t-value of 5.102, and a p-value of 0.000. Although its influence is slightly weaker than that of financial literacy, income remains an important determinant of engagement with digital financial platforms. This result confirms that economic capacity enhances individuals' ability to utilize financial technology not only for daily transactions but also for more advanced financial activities. It reinforces the notion that both cognitive and resource-based factors shape digital financial engagement.

The significance of both path coefficients aligns with the theoretical foundation of the study, which posits that financial capability and financial resources are key elements in driving digital financial behavior. Financial literacy equips users with the knowledge and skills needed to interpret digital financial information, identify risks, and make informed decisions. In contrast, income provides the economic means enabling users to access digital platforms, maintain device quality, and carry out financial activities that may require minimum balances, subscription fees, or investment deposits. Together, these findings highlight the complementary nature of knowledge and economic strength in shaping digital financial behavior. In addition to statistical significance, the magnitude of the coefficients also provides important interpretive implications. The stronger impact of financial literacy suggests that improving users' cognitive abilities may have a more pronounced effect on digital financial behavior than income enhancement alone. This situational pattern is consistent with emerging evidence in financial inclusion literature, which recognizes that higher financial literacy can compensate for limited income by promoting wiser budgeting, spending control, and safer digital financial practices. Conversely, income without adequate literacy may expose users to financial vulnerabilities.

The results also show that both predictors represent distinct yet interrelated pathways influencing digital financial usage. The stability of the path coefficients, combined with low VIF values, indicates that financial literacy and income do not create multicollinearity issues. Instead, their effects operate independently, contributing unique explanatory power to the structural model. This confirms that the model is theoretically coherent and empirically supported, offering strong evidence for the robustness of the SEM-PLS approach applied in the study. Overall, the analysis of path coefficients validates the research hypotheses, demonstrating that financial literacy and income significantly and positively influence digital financial application usage behavior among millennials in Medan. These findings strengthen the empirical foundation of the study and provide valuable insights for policymakers, educators, and financial service providers seeking to improve digital financial inclusion. Enhancing both financial literacy programs and economic support initiatives may therefore produce greater and more sustainable adoption of digital financial services.

Table 7. Path Coefficients

Path	Coefficient (β)	t-value	p-value	Result
X1 → Y	0.389	6.214	0.000	Supported
X2 → Y	0.334	5.102	0.000	Supported

Table 8. Coefficient of Determination

Metric	Value	Interpretation
R^2	0.472	Moderate explanatory power
$f^2 X1 \rightarrow Y$	0.198	Medium effect
$f^2 X2 \rightarrow Y$	0.152	Medium effect
Q^2	0.311	Good predictive relevance
SRMR	0.057	Good model fit (< 0.08)

The SEM-PLS results show that financial literacy exerts a significant and positive influence on digital financial application usage behavior. The path coefficient of 0.389 and t-value of 6.214 confirm that millennials with a better understanding of financial concepts, attitudes, and responsible financial behavior are more active and confident users of financial technology. This highlights financial literacy as a key predictor of digital financial engagement. Income also has a significant impact, with a path coefficient of 0.334 and t-value of 5.102, suggesting that economic capacity plays an important role in enabling access, frequency of use, and diversity of financial activities conducted through digital platforms. Higher-income millennials exhibit stronger financial capability to engage in advanced digital financial services, including investments and automated saving tools. The R^2 value of 0.472 indicates that financial literacy and income jointly explain 47.2% of the variance in digital financial application usage behavior. This moderate level of explanatory power demonstrates that both variables play substantial roles, while additional factors may contribute to the remaining variance. Effect size analysis (f^2) shows that both financial literacy (0.198) and income (0.152) have medium effects on digital financial behavior. This means each variable contributes meaningfully to behavioral changes even when controlling for the influence of the other predictor. These results strengthen the reliability of the structural model.

The Q^2 value of 0.311 indicates strong predictive relevance, demonstrating that the model not only explains but also accurately predicts millennial digital financial behavior. The model maintains robustness when applied to new or unseen data, underscoring its utility in practical settings. Model fit assessment using SRMR (0.057) further validates that the SEM-PLS model demonstrates good overall fit. This means the relationships among latent constructs represent the theoretical model well and align with empirical observations. Such model adequacy supports the internal consistency of the study. Overall, the SEM-PLS findings reinforce that digital financial behavior is shaped by both knowledge-based and resource-based determinants. Financial literacy enhances decision-making quality and risk awareness, while income expands financial capacity and access. Together, they form a strong framework for understanding millennial digital financial engagement in Medan.

Discussion

1. The Influence of Financial Literacy on Digital Financial Application Usage Behavior

The results of the hypothesis testing indicate that financial literacy has a significant and positive effect on digital financial application usage behavior among millennials in Medan, as

demonstrated by the SEM–PLS path coefficient of $\beta = 0.389$ with a t-value of 6.214 and $p < 0.001$. This confirms that the first hypothesis is accepted and shows that higher levels of financial literacy contribute directly to more active, effective, and responsible use of digital financial platforms. The statistical significance reflects the strength of financial literacy as a cognitive driver that shapes how individuals understand, evaluate, and utilize digital financial services in their daily financial activities. Financial literacy enhances users' ability to manage money, recognize financial risks, and make informed decisions when interacting with financial technology. Millennials with better financial literacy tend to understand concepts such as budgeting, interest rates, fees, digital security, and risk mitigation, which encourages more efficient use of digital platforms like mobile banking, e-wallets, peer-to-peer lending, or online investments.

This knowledge allows them to compare service features, select secure applications, and avoid behaviors that can lead to financial loss or fraud, strengthening the link between literacy and behavioral outcomes in digital finance. This finding is also supported by global empirical evidence showing that financially literate individuals are more capable of adopting and maximizing digital financial services. Studies such as Abdallah et al. (2025) Kemalajari et al. (2025), and Tetteh & Kwateng (2026) confirm that financial literacy significantly shapes the ability to engage in technology-enabled financial behavior. For millennials in Medan, who live in an increasingly digitalized economy, financial literacy becomes even more important because digital transactions are deeply integrated into transportation, retail, bill payments, savings, and investment activities. The stronger their literacy, the more confident they are in navigating these systems.

The influence of financial literacy found in this study also reflects the broader digital financial environment in Medan, where fintech adoption is high but not always accompanied by the necessary financial competencies (Isma et al., 2023). In such conditions, users with low literacy remain exposed to risks such as overspending, misinformation, impulse buying, or digital fraud. Conversely, millennials with adequate knowledge can maintain more disciplined financial habits, control spending behavior, and apply financial planning even when interacting with highly dynamic digital applications (Isma et al., 2024). Thus, financial literacy serves as both a protective and enabling factor in digital financial ecosystems.

Overall, the findings strongly support the argument that financial literacy is a key determinant of digital financial application usage behavior. The acceptance of H1 indicates that improving financial literacy can significantly enhance the quality of digital financial engagement among millennials. This highlights the importance of financial education initiatives, whether through formal programs, workplace training, or digital learning modules. Strengthening financial literacy is essential not only for increasing digital financial inclusion but also for improving financial well-being and reducing vulnerability in an era where digital financial services continue to expand rapidly.

2. The Influence of Income on Digital Financial Application Usage Behavior

The results of the statistical analysis indicate that income has a significant and positive effect on digital financial application usage behavior among millennials in Medan, as demonstrated by the SEM–PLS path coefficient of $\beta = 0.334$ with a t-value of 5.102 and $p < 0.001$. This acceptance of the second hypothesis (H2) suggests that income plays an essential role in enabling individuals to access, adopt, and utilize various digital financial services. Higher income allows millennials to possess more advanced technological devices, stable internet access, and greater financial flexibility, all of which contribute to more frequent and diverse

usage of digital financial platforms. Income influences digital financial behavior by shaping an individual's capacity to participate in financial activities that require monetary resources. Millennials with higher earnings are more capable of engaging in online investments, savings applications, subscription-based financial tools, or digital payment systems linked to higher-value transactions. They also tend to use digital platforms for discretionary spending and financial planning, indicating that income supports both consumption-based and investment-based digital financial activities. This aligns with economic behavior theory that financial capability increases with higher income levels.

Empirical evidence from previous studies reinforces this finding. Research by Jünger and Mietzner (2020) highlights that individuals with higher income are more active in mobile banking and fintech investment services, largely due to better financial stability and access to digital infrastructure. Similarly, Morgan et al. (2019) emphasize that income is a strong predictor of digital financial inclusion in emerging markets. The pattern observed in Medan corresponds with these findings, where income facilitates not only access but also the depth of engagement with financial technology. The income effect is particularly relevant in urban settings such as Medan, where economic disparities influence technological adoption. Millennials with higher income typically have greater exposure to digital ecosystems, higher purchasing power to adopt new financial applications, and more opportunities to diversify financial portfolios through digital means.

Meanwhile, lower-income millennials may limit their digital financial activities to essential transactions, such as mobile payments for daily purchases. This economic segmentation creates differing levels of digital financial participation across income groups. In addition to influencing access and intensity of use, income also affects the sophistication of financial behaviors conducted through digital platforms. Higher-income millennials tend to use applications for budgeting, long-term savings, investment tracking, and financial automation systems (Walsh & Lim, 2020; Hilgert & Luttrell, 2023). Their financial capacity enables them to take advantage of features requiring minimum balances, transaction fees, or investment deposits. This contrasts with lower-income users, who may focus primarily on short-term, transactional uses of digital financial tools, highlighting income as a behavioral differentiator.

The significant effect of income found in this study also supports the notion that economic capability interacts with digital readiness. Even when digital financial services are available and easy to use, financial behavior remains constrained by the individual's income level. Higher-income individuals are more likely to adopt digital innovations early, try multiple platforms, and sustain usage over time because they encounter fewer financial barriers. Thus, income facilitates not only initial adoption but also long-term engagement with digital financial ecosystems. Overall, the acceptance of H2 confirms that income is an important determinant of digital financial application usage behavior among millennials in Medan. While income does not fully dictate behavior, it significantly enhances the ability to utilize digital financial services more broadly and effectively. These findings underscore the importance of supporting digital financial inclusion strategies that also consider economic conditions. Addressing income-related disparities can help ensure that the benefits of digital financial services reach all segments of the millennial population, not only those with stronger financial capacity.

3. The Joint Influence of Financial Literacy and Income on Digital Financial Application Usage Behavior

The results of the simultaneous analysis using SEM-PLS show that financial literacy and income together have a significant impact on digital financial application usage behavior among

millennials in Medan. Instead of the F-test used in multiple regression, SEM-PLS evaluates the simultaneous effect through the explanatory power of the structural model. The combined predictive strength of financial literacy and income is reflected in the R^2 value of 0.472, indicating that both variables jointly explain 47.2% of the variance in digital financial behavior. This confirms that the third hypothesis (H3) is accepted and demonstrates that the interaction between cognitive capability and economic capacity produces a stronger influence than either factor alone. These findings highlight that digital financial adoption is multidimensional and requires both financial understanding and financial resources.

The simultaneous effect of financial literacy and income suggests that digital financial behavior emerges from the interaction of knowledge and economic conditions. Millennials with adequate financial literacy possess the ability to evaluate risks, identify credible platforms, understand financial fees, and manage transactions wisely (Pokharel & Maharjan, 2024). When these competencies are paired with sufficient income, their capacity to use digital financial applications expands even further, not only for basic transactions but also for advanced financial activities such as investments, savings, and recurring payments. This complementary interaction enhances both the frequency and quality of digital financial engagement.

From a behavioral economics perspective, the combination of literacy and income supports more optimal decision-making within digital financial environments. Financial literacy strengthens users' cognitive frameworks, enabling them to assess financial options effectively, while income provides the economic means to execute these decisions. Prior studies emphasize that financial behaviors are rarely driven by a single factor; instead, they result from the interplay between knowledge, access, and financial constraints (Hamilton et al., 2019). The SEM-PLS findings reinforce this view by demonstrating that the interaction between literacy and income significantly shapes digital financial behavior in urban settings. In the context of Indonesia's digital economy, including Medan as one of its rapidly developing urban centers, the combined influence of literacy and income is particularly important. Financial technology services have become increasingly integrated into daily life, yet not all users possess equal resources or financial capability. Millennials with both adequate income and adequate literacy successfully navigate digital financial systems, whereas those lacking one of these dimensions may experience limited engagement or misuse. This explains why the structural model shows stronger predictive power when both variables are considered simultaneously.

The significant joint effect also illustrates the importance of structural and socioeconomic factors in shaping digital financial inclusion. While financial literacy programs are essential, they are insufficient if millennials lack financial capacity to participate in the digital financial ecosystem. Conversely, higher income without proper literacy may lead to risky financial behaviors or exposure to fraudulent schemes. Thus, improving digital financial behavior requires a dual approach that enhances both economic conditions and financial education to ensure balanced, sustainable, and secure participation. The R^2 value of 0.472 further strengthens this interpretation, indicating that financial literacy and income jointly explain nearly half of the variance in digital financial application usage behavior. Although this level of explanatory power is substantial, it also implies that other factors such as perceived ease of use, digital trust, social influence, and technological readiness contribute to the remaining variance.

Nevertheless, the sizeable effect of literacy and income demonstrates that these two variables remain foundational components shaping digital financial behavior among millennials navigating increasingly complex digital financial services. Overall, the acceptance of H3 confirms

that financial literacy and income collectively form a robust predictor of digital financial application usage behavior among millennials in Medan. This simultaneous influence underscores the necessity of integrated strategies for enhancing digital financial inclusion. Policymakers, educators, and fintech providers should address both financial capability and economic disparities to ensure that digital financial adoption contributes to improved financial well-being. Strengthening both dimensions is essential for empowering millennials to participate fully and responsibly in Indonesia's rapidly evolving digital financial landscape.

CONCLUSIONS

The results of this study demonstrate that financial literacy plays a crucial role in shaping digital financial application usage behavior among millennials in Medan. Through the SEM-PLS structural model, financial literacy was found to have a significant positive effect, indicating that knowledge, attitudes, and responsible financial behaviors contribute directly to how effectively and confidently individuals use digital financial services. This finding underscores the importance of cognitive readiness in determining users' ability to navigate financial technology in an increasingly digitalized economic landscape. Income also emerged as a significant determinant of digital financial behavior. The results show that millennials with higher income levels are better able to access and engage with a broader range of digital financial services, including online investments, savings platforms, and subscription-based financial tools. This suggests that economic capability not only increases access to financial technology but also enhances the depth and diversification of its usage. As such, income remains a key enabling factor in promoting digital financial inclusion.

The simultaneous effect of financial literacy and income further strengthens the understanding of digital financial behavior as a multidimensional phenomenon. The SEM-PLS analysis shows that the combination of these two variables explains a substantial portion of the variance in digital financial application usage behavior. This confirms that digital financial engagement is shaped by both cognitive competencies and economic resources. When users possess both adequate financial literacy and sufficient income, their participation in digital financial ecosystems becomes more responsible, active, and sustainable. The findings also highlight the importance of addressing disparities in financial capability and income levels. Millennials with limited financial literacy or low income remain vulnerable to misusing digital financial applications, engaging in impulsive transactions, or falling victim to digital fraud. The presence of these disparities suggests that digital financial inclusion cannot rely solely on technological expansion; it must be accompanied by strategic efforts to improve financial education and economic empowerment among younger demographics.

Furthermore, the study illustrates that digital financial behavior is influenced not only by knowledge and income but also by the environmental and social context of Medan as a fast-growing urban center. High digital adoption rates in the city create opportunities, but they also demand preparedness among users. As digital financial systems become increasingly integrated into everyday activities, the need for both literacy and economic capacity becomes even more critical to ensuring safe and beneficial digital financial practices.

The results also carry implications for policymakers, financial institutions, and educators seeking to promote responsible digital financial engagement. Interventions must be designed to simultaneously strengthen financial literacy and improve economic access, particularly among millennial users who represent a dynamic and digitally active population. Financial education programs, digital literacy campaigns, and targeted financial support mechanisms are necessary

to reduce financial vulnerability and enhance long-term financial well-being. Overall, the study concludes that financial literacy and income are foundational components of digital financial application usage behavior among millennials in Medan. By integrating cognitive knowledge with economic ability, millennials can effectively participate in the digital financial ecosystem, optimize their financial decisions, and build stronger financial resilience. Strengthening both dimensions is essential for fostering inclusive, safe, and sustainable digital financial development, especially as Indonesia continues to expand its digital economy.

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