Digital Finance for Sustainable Living: The Role of Digital Financial Literacy and FinTech with Mediation of Financial Behaviour among Malaysian Working Adults

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ABSTRACT

The rapid digitalisation of financial services has transformed how individuals manage their personal finances, particularly in emerging economies such as Malaysia. While financial technology (FinTech) and digital financial services have expanded access to financial products, their implications for long-term financial sustainability remain insufficiently understood. This study investigates the role of digital financial literacy and FinTech usage in shaping financial behaviour and financial sustainability among Malaysian working adults. A quantitative research design was employed using a structured survey administered to working adults aged 30–65 across five Malaysian states. A multistage probability sampling approach was adopted, resulting in 410 valid responses. Data were analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM). The findings reveal that digital financial literacy and FinTech are significantly associated with financial behaviour. In turn, financial behaviour demonstrates a strong positive effect on financial sustainability. Mediation analysis further indicates that financial behaviour partially mediates the relationships between digital financial literacy and financial sustainability, as well as between FinTech usage and financial sustainability.These results highlight the critical role of financial behaviour as a behavioural mechanism through which digital financial capabilities translate into sustainable financial outcomes. The study contributes to the growing literature on financial capability by integrating digital financial literacy and FinTech within a unified behavioural framework. From a policy perspective, the findings underscore the importance of strengthening digital financial literacy and promoting responsible financial behaviour to enhance household financial resilience. Such initiatives are particularly relevant for Malaysia as it advances towards a digitally inclusive financial ecosystem.

Keyword: Financial Sustainability, Digital Finance, FinTech, Financial Behaviour, Personal Finance, Working Adult

INTRODUCTION

Globally, financial stress among working-age populations has intensified amid prolonged economic uncertainty, rising inflation, and structural transformations in labour markets. Escalating living costs, stagnant wage growth, and increased reliance on credit have weakened household financial resilience, even in many middle-income and emerging economies. International organisations such as the World Bank and the OECD have emphasised that household-level financial sustainability is a key determinant of broader economic stability and individual well-being, particularly in the post-pandemic period when income volatility and debt exposure have become increasingly pronounced.

Within this global landscape, Malaysia presents a particularly relevant case. As one of Southeast Asia's leading economies, Malaysia reflects both economic progress and emerging financial vulnerabilities. Ranked as the 36th largest economy globally (Asian Development Bank & Islamic Development Bank, 2025), the country has

undergone substantial structural transformation since independence, evolving from an agriculture-based economy into a diversified, export-oriented one. Despite consistent economic growth and a relatively developed financial system, Malaysia continues to experience persistently high levels of household indebtedness. Household debt stands at approximately 84% of GDP, placing it among the highest in Asia. As the nation pursues post-pandemic recovery and strategic development goals under the 12th Malaysia Plan (2021–2025), several structural challenges threaten the sustainability of household finances.

Bank Negara Malaysia (BNM) has repeatedly cautioned that elevated household debt levels, combined with rising interest rates and inflationary pressures, present significant risks to financial stability at the household level. These risks are particularly pronounced among working adults, who bear the primary responsibility for income generation and debt repayment. At the same time, increases in food prices, housing expenses, and utility costs have reduced real disposable income, further constraining household cash flows and financial flexibility.

From a systems perspective, working adults function as central actors within the household financial structure. Their financial literacy, behavioural discipline, and engagement with financial technologies influence critical decisions related to income allocation, debt management, emergency preparedness, and long-term financial security (Deacon & Firebaugh, 1988; Sabri et al., 2022). Consequently, financial vulnerability at the individual level may cascade into broader household instability, increasing the risk of debt distress, inadequate retirement preparedness, and intergenerational financial insecurity. Evidence from the Employees Provident Fund (EPF) indicates that a substantial proportion of Malaysian contributors possess insufficient retirement savings, signalling long-term risks to household financial sustainability that extend beyond the individual contributor (EPF, 2023).

These concerns are further reflected in the Bankruptcy Statistics Report (2024) issued by the Department of Insolvency Malaysia, which highlights growing financial distress among Malaysians amid rapidly evolving economic conditions. National indicators consistently point to rising financial vulnerability among working adults. EPF data reveal that many members lack adequate retirement savings and may struggle to meet basic needs in old age. In addition, the Credit Counselling and Debt Management Agency (AKPK) reports a steady increase in individuals seeking debt counselling services, particularly among those aged 30–49. This trend underscores widespread difficulties in managing financial obligations such as personal loans, credit card debt, and housing loans. Bankruptcy statistics from the Department of Insolvency further reinforce this pattern, showing that most insolvency cases involve economically active working adults. Taken together, these findings suggest that the issue reflects systemic weaknesses in household financial management rather than isolated instances of financial misfortune.

In this context, digital financial literacy has emerged as an increasingly important capability. It enables individuals to evaluate online credit costs, monitor cash flows through mobile applications, automate savings, and assess investment risks in real time (Lyons & Kass-Hanna, 2021; Morgan et al., 2019). When effectively utilised, digital financial platforms can strengthen financial stability by enhancing budgeting discipline, lowering transaction costs, improving financial transparency, and supporting long-term financial planning (OECD, 2023). However, insufficient digital literacy may instead expose individuals to greater financial risks.

Given the rapid digitalisation of financial services in Malaysia, understanding how working adults engage with financial technologies and digital financial tools has become increasingly important. Although financial technology (FinTech) offers significant opportunities to improve financial access and efficiency, inadequate digital financial literacy and low financial self-efficacy may exacerbate financial vulnerability rather than alleviate it. Consequently, examining financial behaviour as the mechanism through which digital literacy, technological engagement, and psychological confidence influence financial sustainability is both timely and necessary. These financial decisions, grounded in principles of family economics and management, play a crucial role in securing household stability while enabling personal and intergenerational financial advancement. Accordingly, this study seeks to address an important gap by examining the determinants of financial sustainability among Malaysian working adults, situating individual financial behaviour within broader economic, institutional, and digital contexts. This study does not aim to establish causal relationships but rather to examine theoretically grounded associations and behavioural pathways linking digital financial capability to financial sustainability.

LITERATURE REVIEW

Financial Sustainability

Financial sustainability refers to an individual's capacity to maintain financial stability over time while meeting both current and future financial obligations. It encompasses the ability to accumulate sufficient savings, manage debt prudently, and prepare for long-term financial needs. At the household level, financial sustainability is closely linked to broader economic stability, as households constitute a fundamental component of the real economy.

Persistent increases in household debt have raised concerns regarding economic resilience and systemic vulnerability, particularly when debt servicing burdens coincide with income instability (Debelle, 2004; Rinaldi & Sanchis-Arellano, 2006). Although macroeconomic analyses often emphasise aggregate household debt dynamics, financial sustainability ultimately depends on the financial behaviours and decision-making capacity of economically active individuals within households. In this regard, working adults play a pivotal role as the primary income earners and financial decision-makers responsible for managing debt obligations, allocating financial resources, and planning for long-term financial security.

Compared with emerging adults who typically experience transitional financial stages (Xiao et al., 2009), working adults aged 30–65 encounter more sustained and complex financial responsibilities. These include mortgage repayments, dependent care, education financing, and retirement preparation. Such long-term commitments intensify the need for sound financial management and heighten the consequences of financial mismanagement, making financial sustainability particularly critical within this demographic group.

At the same time, the financial landscape has undergone substantial transformation due to the rapid digitalisation of financial services (George, 2024; Mavlutova et al., 2020). Working adults increasingly interact with digital financial ecosystems that include online lending platforms, mobile payment systems, automated investment services, and digitally mediated financial advice. While these technological innovations offer greater convenience and financial access, they also introduce new risks such as overexposure to digital credit, information asymmetry, and cybersecurity threats (Kiran & Verma, 2024; Liu et al., 2025). Consequently, financial sustainability is no longer determined solely by traditional financial management practices but increasingly depends on individuals' digital financial literacy and their ability to regulate financial behaviour in technologically mediated environments.

Furthermore, contemporary financial challenges extend beyond conventional debt management (Wanof, 2023). Rising living costs, expanded consumer credit availability, and the proliferation of digital financial services require individuals to integrate financial knowledge, technological competence, and behavioural discipline in their financial decision-making processes (Koskelainen et al., 2023; Kumar et al., 2023). These shifts highlight the importance of examining financial sustainability at the individual level, particularly among working adults operating within emerging digital economies such as Malaysia.

Accordingly, investigating financial sustainability among working adults provides critical micro-level insights into how financial behaviour, digital financial literacy, and engagement with financial technology (FinTech) shape household financial resilience in an increasingly complex economic environment. Understanding these relationships is essential for developing policies and interventions aimed at strengthening financial capability and long-term household financial stability.

Digital Financial Literacy

This study proposes that digital financial literacy may influence financial sustainability through its effect on financial behaviour. Individuals with stronger digital financial competencies are better equipped to make informed financial decisions, effectively manage financial resources, and utilise digital financial tools responsibly. Higher levels of digital financial literacy are associated with the adoption of positive financial behaviours, including budgeting, saving, and prudent investment practices, which collectively contribute to long-term financial stability and resilience (Bhat et al., 2025). Conversely, insufficient digital financial literacy may

lead to poor financial decision-making, increased susceptibility to digital fraud, and impulsive financial behaviours that undermine financial sustainability.

In Malaysia, the transition toward a digitally driven financial landscape has accelerated rapidly, driven by FinTech innovations and the lasting effects of the COVID-19 pandemic (Magid et al., 2024). This transformation has expanded the availability of digital financial services encompassing savings, investments, borrowing, payments, and risk management, most of which are now accessed through online or mobile platforms. However, the effective utilisation of these services depends largely on individuals' ability to understand and navigate digital financial systems. Adequate digital financial literacy therefore plays a crucial role in enabling individuals to participate meaningfully in financial markets, make informed financial decisions, and protect themselves against financial scams and exploitation.

Recent scholarly work increasingly recognises digital literacy as a critical component of financial capability frameworks. Lyons and Kass-Hanna (2021) argue that digital financial literacy equips individuals with the competencies required to navigate complex digital financial ecosystems, thereby promoting financial inclusion and resilience. Evidence from Malaysia further reinforces this perspective. The Bank Negara Malaysia Financial Capability and Inclusion Survey (2024) indicates that although access to digital financial services has expanded significantly, many adults continue to struggle with fundamental financial concepts such as interest rate calculations, risk evaluation, and long-term financial planning.

Taken together, these developments highlight the growing importance of digital financial literacy in shaping financial sustainability. Digital financial literacy influences how individuals interact with financial technologies, process financial information, and engage in financial decision-making, all of which are reflected in their financial behaviour. Furthermore, demographic factors such as age may moderate these relationships, as different age groups may vary in their familiarity with digital technologies and financial decision-making experiences. Accordingly, strengthening digital financial literacy should be prioritised in both academic research and policy initiatives to ensure that working adults in Malaysia are adequately equipped to achieve long-term financial wellbeing in an increasingly digital financial environment.

H_1: Digital financial literacy is positively significant with financial behaviour

Financial Technology (FinTech)

Financial Technology (FinTech) refers to a broad range of technology-driven innovations that transform the delivery and accessibility of financial services. These innovations include mobile banking, digital payment systems, peer-to-peer lending platforms, robo-advisory services, artificial intelligence applications, and blockchain-based financial infrastructures (Arner et al., 2016; Barroso & Laborda, 2022). FinTech aims to enhance the efficiency, accessibility, and inclusiveness of financial services by reducing transaction costs and expanding access to financial products beyond conventional banking channels (Frost et al., 2019; OECD, 2023). In emerging economies such as Malaysia, FinTech has become a key driver of financial inclusion and digital economic participation, as reflected in national policy initiatives such as the Financial Sector Blueprint 2022–2026 introduced by Bank Negara Malaysia (2022).

Scholars increasingly suggest that integrating financial education within digital financial platforms may improve individuals' capacity to make informed financial decisions (OECD, 2022). Digital platforms have the potential to deliver financial knowledge, decision-support tools, and personalised financial insights that can strengthen financial capability. However, empirical evidence regarding how such integration translates into long-term financial sustainability remains limited. While FinTech may expand access to financial services and information, its impact on financial sustainability is likely to depend on how individuals utilise these technologies in managing their financial resources.

This perspective highlights the mediating role of financial behaviour in linking FinTech engagement to financial sustainability outcomes. Access to digital financial tools alone does not necessarily guarantee improved financial well-being. Rather, the financial practices adopted by individuals when interacting with these technologies ultimately shape long-term financial outcomes. Financial behaviours such as disciplined budgeting, prudent

borrowing, and consistent saving represent key behavioural pathways through which digital financial engagement may influence financial sustainability (Farrell et al., 2016; Serido et al., 2014).

The rapid digitalisation of financial services accelerated by the COVID-19 pandemic has further intensified reliance on contactless payments, online banking, and mobile wallet applications (Seldal & Nyhus, 2022). Although this transformation has enhanced convenience and broadened financial access, researchers caution that increased digital financial engagement without corresponding financial capability may expose individuals to greater financial risks, including excessive debt accumulation and heightened financial stress (Gai & Sun, 2018; OECD, 2023). These developments underscore the importance of examining digital financial literacy and FinTech usage collectively rather than as independent factors.

For working adults, who typically serve as primary income earners and financial decision-makers within households, the ability to navigate digital credit platforms, investment applications, and online financial services has become increasingly important. At the same time, they must balance these technological interactions with long-term financial responsibilities such as debt management, savings accumulation, and retirement planning. Accordingly, this study investigates how digital financial literacy and FinTech engagement influence financial sustainability among Malaysian working adults, with financial behaviour conceptualised as the mediating mechanism linking digital financial capability to sustainable financial outcomes.

H_2: Financial technology is positively significant with financial behaviour

Financial Behaviour

Financial behaviour refers to the financial decisions and practices individuals adopt in managing income, savings, debt, and long-term financial planning (Sabri et al., 2022; Xiao, 2008). Among working adults, financial behaviour is particularly important because they carry primary responsibility for income generation, debt repayment, household expenditure, and retirement planning. Prudent financial practices such as budgeting, responsible borrowing, maintaining emergency savings, and engaging in systematic investment have been consistently associated with improved financial stability and reduced financial stress (Yoganandham, 2025).

In Malaysia, concerns regarding weak financial practices among working adults have been widely documented. Studies and national reports highlight issues such as excessive reliance on credit, inadequate budgeting practices, and insufficient savings (Malaysian Financial Planning Council, 2016; AKPK, 2022). These behavioural weaknesses contribute directly to household financial vulnerability, particularly within an economic environment characterised by rising living costs and increasing reliance on digital financial services. Consequently, understanding the determinants of financial behaviour is essential for explaining variations in long-term financial sustainability.

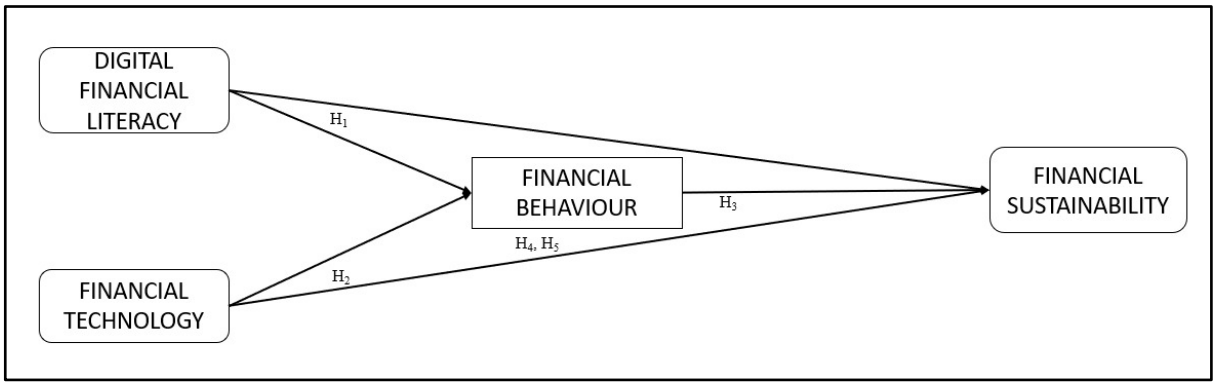
Furthermore, empirical research focusing specifically on Malaysian working adults remains relatively limited. Existing studies often adopt descriptive approaches or focus primarily on traditional financial literacy, without adequately incorporating digital financial capabilities within an integrated analytical framework. Given Malaysia's rapid digital financial transformation and persistently high levels of household indebtedness, examining financial behaviour as the mechanism through which digital and psychological determinants influence financial sustainability is both timely and necessary.

H_3: Financial behaviour is positively significant with financial sustainability

H_4: Financial behaviour mediates the relationship between digital financial literacy and financial sustainability

H_5: Financial behaviour mediates the relationship between financial technology and financial sustainability

Figure 1. Conceptual Framework



METHODOLOGY

Given the large size of the target population, which consists of approximately 17,309,921 working adults in Malaysia, it was impractical to include every individual in the population. Therefore, a multistage probability sampling method was employed to obtain a manageable and representative sample aligned with the objectives and practical constraints of the study. The survey was conducted across Malaysia, which comprises 14 states. The target population for this study consisted of working adults aged between 30 and 65 years, including both male and female respondents. According to the Department of Statistics Malaysia (DOSM), individuals within the 30–64 age group are classified as being within the prime working age. This classification is appropriate for the Malaysian context, where individuals aged 18–29 are generally categorised as youths.

To ensure geographical representation and sample diversity, a multistage cluster sampling technique was adopted. The sampling process was conducted in three stages. In the first stage, Malaysia was divided into five geographical zones, each representing a primary cluster. This zonal division facilitated broad national representation and improved the geographical coverage of the study. In the second stage, one state was randomly selected from each zone using simple random sampling. The selected states were Kedah, Johor, Terengganu, Selangor, and Sabah. Subsequently, within each selected state, all districts were listed and three districts were randomly selected to narrow the scope of the survey and facilitate data collection. In the third stage, respondents were selected based on their employment sector to ensure balanced representation from both government and private organisations. Government agencies were identified through official government websites, from which departments and individual employees were randomly selected. For the private sector, organisations were randomly selected from the Companies Commission of Malaysia (SSM) database, followed by the random selection of employees within each organisation.

A total of 500 respondents were targeted using this multistage sampling approach. From each selected state, 100 working adults were recruited, with equal representation from government and private sector organisations. Questionnaires were distributed to all selected participants across the five states, resulting in a total of 500 distributed surveys. To ensure the relevance of the sample to the research objectives, several inclusion and exclusion criteria were applied. Participants were required to be working adults currently employed in either the public or private sector. Individuals who identified as self-employed, such as small business owners, freelancers, or independent professionals, were categorised under the private sector as they operate outside government employment structures.

PLS-SEM is appropriate for this study as the objective is theory development and prediction rather than strict causal inference. The approach is widely used in behavioural finance, marketing, and social science research where complex latent constructs are examined. Given the exploratory nature of integrating digital financial literacy, FinTech usage, and financial behaviour, PLS-SEM provides a suitable analytical framework.

Full-time students and interns were excluded from the study because the unit of analysis focuses on financially independent working adults. Students and interns may not yet assume full financial responsibility or engage in long-term financial decision-making comparable to established working adults. Including these groups could therefore introduce variability unrelated to the theoretical constructs examined, particularly financial

sustainability within working adulthood. After applying the exclusion criteria and removing incomplete responses, a total of 410 valid questionnaires were retained for analysis. These responses constitute the final sample representing Malaysian working adults aged between 30 and 65 years.

Measures

This study examines two primary independent variables: digital financial literacy (DFL) and financial technology (FinTech). Digital financial literacy was measured using 16 items adapted from Morgan, Huang, and Trinh (2019). DFL refers to individuals' ability to understand, evaluate, and effectively utilise digital financial services and tools, including online banking platforms, digital wallets, and electronic payment systems. Examining DFL is essential for understanding how individuals' competencies in digital financial environments influence their financial decision-making and outcomes. The second independent variable, FinTech usage, was measured using 24 items adapted from Demirgüç-Kunt et al. (2022). FinTech refers to individuals' adoption and utilisation of innovative financial technologies, such as mobile payment applications, online banking services, investment platforms, and other digital financial services. Assessing FinTech usage allows the study to capture the extent to which individuals engage with emerging financial technologies in their daily financial activities. Financial behaviour serves as the mediating variable in this study and was measured using 19 items adopted and adapted from Rajna et al. (2011) and Prawitz et al. (2006). This construct captures various dimensions of individuals' financial management practices, including budgeting behaviour, saving habits, spending patterns, debt management, and investment decisions. As a mediating variable, financial behaviour is hypothesised to explain the mechanism through which digital financial literacy and FinTech usage influence financial sustainability.

While self-reported measures are commonly used in behavioural finance and financial capability research, they may be subject to response bias and social desirability effects. However, such measures remain appropriate for capturing behavioural tendencies and perceptions that are not directly observable in administrative data. To mitigate these concerns, this study employed validated scales from prior literature, ensured anonymity, and conducted pilot testing to improve clarity and reduce misinterpretation.

Table 1: Reliability Coefficient for Pilot test and Final Test

Variables	**Pre-test (n=30)**		**Actual test (n=410)**	
	No. Items	**Alpha (α)**	**No. Items**	**Alpha (α)**
Digital Financial Literacy	16	0.942	11	0.901
Financial Technology	24	0.948	11	0.898
Financial Behaviour	19	0.953	14	0.927
Financial Sustainability	21	0.874	6	0.847

RESULTS

Demographics Results

More than half of the respondents (55.4%) were within the 30–39 age group. This distribution is consistent with labour force trends, as individuals within this age bracket typically represent a substantial proportion of the active working population (Mehta et al., 2020). In terms of gender distribution, the sample was relatively balanced, with females representing a slight majority at 50.7% (208 respondents), while males accounted for 49.3% (202 respondents). Regarding educational attainment, respondents holding the Sijil Pelajaran Malaysia (SPM) qualification constituted the largest group, accounting for 24.6% of the sample. With respect to the employment sector, 47.8% of respondents were employed in the private sector, 43.4% were government employees, and 8.8% were self-employed. Analysis of respondents' monthly income indicated that the most common income range

was RM3,170–RM3,969, representing 21% of the sample (86 respondents). In contrast, the smallest proportion of respondents (2.9%) reported earning between RM10,960 and RM15,039. In terms of financial position, 38.3% of respondents reported that their total assets exceeded their outstanding debt. Furthermore, when assessing income adequacy, 32.9% of respondents indicated that their income was sufficient to cover only their basic living expenses.

Table 2: Socio-demographic characteristics and background (n=410)

Variables	**Frequency**	**Percentage**
Age Groups		
30-39 years old	227	55.4
40-49 years old	131	32
50-59 years old	52	12.7
Gender		
Male	202	49.3
Female	208	50.7
Ethnicity		
Malay	329	80.2
Chinese	14	3.4
Indian	4	1
Native Sarawak	10	2.4
Native Sabah	53	12.9
Marital Status		
Single	113	27.6
Married	272	66.3
Widowed/ Divorced	25	6.1
Education		
Primary School	3	0.7
PMR/PT3	4	1
SPM	101	24.6
STPM	19	4.6
Diploma/ Certificate	77	18.8

Degree	100	24.4
Masters	76	18.5
PhD	29	7.1
Others	1	0.2
Employment		
Government	178	43.4
Private	196	47.8
Self-employed	36	8.8
Salary		
< RM2,499	76	18.5
RM2,500-RM3,169	44	10.7
RM3,170-RM3,969	86	21
RM3,970-RM4,849	52	12.7
RM4,850-RM5,879	35	8.5
RM5,880-RM7,099	29	7.1
RM7,110-RM8,699	40	9.8
RM8,700-RM10,959	19	4.6
RM10,960-RM15,039	12	2.9
> RM15,040	17	4.1
Family Size		
0 - 5	308	75.1
6 - 10	96	23.4
11 - 15	5	1.2
16 - 20	0	0
21 - 25	1	0.2
Home Ownership		
Own	207	50.5
Staying with others	4	1

Rent	92	22.4
Owned by family	76	18.5
Relative/friend's House	1	0.2
Inherited	5	1.2
Quarters	24	5.9
Others	1	0.2
Financial Status		
Asset values less than outstanding debt	134	32.7
Asset values equal to outstanding debt	119	29
Asset values more than outstanding debt	157	38.3
Income Adequacy		
Not sufficient	42	10.2
Enough for basic needs only	135	32.9
Enough for most things	117	28.5
Enough to buy all the items and save money	116	28.3

Measurement Model

The measurement model was evaluated to assess convergent validity, reliability, and discriminant validity in accordance with the guidelines proposed by Hair et al. (2021a). Convergent validity and construct reliability were examined using several indicators, including factor loadings, average variance extracted (AVE), composite reliability (CR), and Cronbach's alpha. As presented in Table 2, all measurement items exhibited satisfactory factor loadings and were therefore retained for further analysis. The AVE and CR values for each construct met the recommended thresholds, indicating adequate convergent validity and internal consistency. According to Hair et al. (2011), AVE values of at least 0.50 and CR values of 0.70 or higher indicate acceptable levels of convergent validity.

Table 3: The results of reflective measurement model

Constructs	**Item**	**Loadings**	**AVE**	**Composite Reliability (CR)**	**Cronbach's Alpha**
Digital Financial Literacy	B5	0.700	0.502	0.917	0.901
	B6	0.737			
	B7	0.747			
	B8	0.770			

	B9	0.725			
	B10	0.690			
	B11	0.724			
	B12	0.679			
	B13	0.651			
	B15	0.695			
	B16	0.666			
Financial Technology	C1	0.748	0.522	0.915	0.897
	C10	0.785			
	C11	0.752			
	C13	0.768			
	C14	0.685			
	C17	0.696			
	C21	0.586			
	C22	0.766			
	C23	0.797			
	C24	0.606			
Financial Behaviour	E1	0.664	0.513	0.936	0.927
	E10	0.704			
	E11	0.721			
	E12	0.697			
	E13	0.699			
	E14	0.714			
	E15	0.751			
	E16	0.719			
	E17	0.701			
	E18	0.776			
	E19	0.711			

Financial Sustainability	F1	0.694	0.572	0.888	0.847
	F3	0.816			
	F4	0.740			
	F5	0.821			
	F6	0.837			
	F7	0.602			

Discriminant validity was assessed to ensure that each reflective construct was empirically distinct from other constructs within the model (Hair et al., 2011). Specifically, discriminant validity confirms that a construct shares greater variance with its associated indicators than with indicators of other constructs in the PLS structural model (Hair & Alamer, 2022). Traditionally, variance-based structural equation modelling has relied on the Fornell–Larcker criterion and cross-loading analysis to evaluate discriminant validity. However, simulation studies by Henseler, Ringle, and Sarstedt (2015) demonstrated that these traditional approaches may fail to reliably detect the absence of discriminant validity under certain research conditions. To address this limitation, the authors proposed the Heterotrait–Monotrait ratio of correlations (HTMT) as a more robust method for assessing discriminant validity within the multitrait–multimethod framework.

The HTMT approach has since been widely recognised as a reliable and recommended technique for evaluating discriminant validity in PLS-SEM analysis (Ringle et al., 2024). According to established guidelines, discriminant validity is confirmed when the HTMT value between two reflective constructs is below the threshold of 0.90. Therefore, HTMT values below this threshold indicate that the constructs are empirically distinct, thereby supporting the validity of the measurement model.

Table 4: Heterotrait-monotrait ratio (HTMT)

Variable	**DFL**	**FINBEH**	**FINSUS**	**FINTECH**
DFL				
FINBEH	0.490			
FINSUS	0.544	0.764		
FINTECH	0.833	0.491	0.544	

Note: DFL: Digital Financial Literacy; FINBEH: Financial Behaviour; FINSUS: Financial Sustainability; FINTECH: Financial Technology

Face Validity

In the present study, face validity was assessed following the evaluation of content validity through a combination of expert review and pilot testing. Initially, four subject-matter experts in the financial field were invited to evaluate the revised questionnaire. The experts assessed each item in terms of its relevance to the corresponding construct and its clarity. Two separate 4-point rating scales were used: one ranging from 1 (Not Relevant) to 4 (Highly Relevant), and another ranging from 1 (Unclear/Not Comprehensible) to 4 (Very Clear/Comprehensible). Following the expert review, a pilot test was conducted with 30 respondents who met the study's inclusion criteria. The questionnaire was administered in person to ensure that respondents could seek clarification when necessary. Participants were asked to provide feedback regarding item clarity, potential ambiguity, and cultural appropriateness. This process helped ensure that the questionnaire items were clearly understood and perceived as relevant by the target population. Based on the feedback obtained from both the

expert evaluation and the pilot participants, minor revisions were made to improve wording and clarity. The finalised questionnaire was subsequently used for the main data collection phase.

Structural Model

Figures 4 and 5 illustrate the systematic procedure used to evaluate the structural model in this study. In PLS-SEM analysis, several criteria are commonly applied to assess the structural model, including confidence intervals obtained through bootstrapping, effect size (f^2), collinearity diagnostics using the variance inflation factor (VIF), the coefficient of determination (R^2) which indicates the variance explained by the model, and predictive relevance assessed using PLS Predict. The primary objective of the structural model assessment is to examine the hypothesised relationships among the constructs specified in the research model. Prior to evaluating the structural relationships, collinearity among predictor constructs was assessed to ensure that multicollinearity did not bias the path coefficient estimates. As presented in the tables below, the variance inflation factor (VIF) values for all constructs ranged from 1.00 to 2.587, which are well below the commonly recommended threshold of 5. This indicates that multicollinearity is not a concern in the structural model and that the predictor constructs can be reliably used to estimate the structural relationships.

Table 5: Relationship of the results of the Significance and t value of indicators

Hypothesis	**Relationship**	**Std Beta**	**Std Dev**	**t-values**	**p-values**	**PCI LL**	**PCI UL**	**f^2**	**VIF**
H_1	DFL → FINBEH	0.149	0.074	2.028	0.043	0.005	0.295	0.013	2.416
H_2	FINTECH → FINBEH	0.169	0.077	2.197	0.028	0.019	0.322	0.016	2.587
H_3	FINBEH → FINSUS	0.715	0.030	24.035	0.000	0.650	0.768	0.908	1.127

DFL: Digital Financial Literacy; FINBEH: Financial Behaviour; FINSUS: Financial Sustainability; FINTECH: Financial Technology

Table 6: Results of mediating effect

Hypothesis	**Relationship**	**Std Beta**	**Std Dev**	**t-values**	**p-values**	**PCI LL**	**PCI UL**	**f^2**	**Mediation**
H_4	DFL →FINSUS	0.079	0.040	1.950	0.051				Partial
	DFL → FINBEH → FINSUS	0.107	0.053	2.023	0.043	0.004	0.212	0.011	
H_5	FINTECH → FINSUS	0.096	0.044	2.199	0.028				Partial
	FINTECH → FINBEH → FINSUS	0.121	0.056	2.171	0.030	0.013	0.232	0.015	

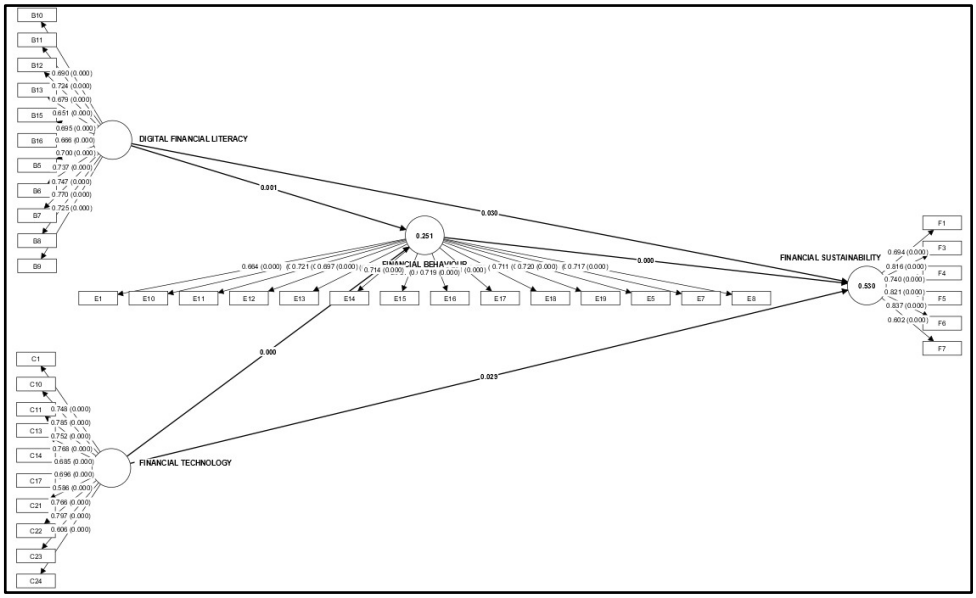
Source: Own survey results.

Following the validation of the measurement model, path analysis was conducted to test hypotheses H_1 through H_5. The structural model was evaluated using a non-parametric bootstrapping procedure with 10,000 resamples to estimate standardized path coefficients (β) and corresponding t-values. The results of the direct path estimates are presented in Table 4. The findings indicate that digital financial literacy is positively and significantly associated with the financial behaviour of working adults ($\beta = 0.149$, $t = 2.028$, $p = 0.043$), thereby supporting H_1. Similarly, FinTech usage demonstrates a significant positive relationship with financial behaviour ($\beta = 0.169$,

t = 2.197, p = 0.028), providing support for H_2. Furthermore, financial behaviour shows a strong and significant effect on financial sustainability (β = 0.715, t = 24.035, p < 0.001), confirming H_3.

To examine the mediating effects proposed in H_4 and H_5, indirect effect analyses were conducted using the same bootstrapping procedure (see Table 5). The results reveal a significant indirect effect of digital financial literacy on financial sustainability through financial behaviour (β = 0.107, t = 2.023, p = 0.043), supporting H_4. Similarly, FinTech exhibits a significant indirect effect on financial sustainability via financial behaviour (β = 0.121, t = 2.171, p = 0.030), thereby supporting H_5. Additionally, the direct effects of digital financial literacy and FinTech on financial sustainability remain significant after the inclusion of financial behaviour in the structural model. This indicates that financial behaviour partially mediates the relationships between digital financial literacy and financial sustainability, as well as between FinTech usage and financial sustainability.

Figure 2. Structural Model of the Study



DISCUSSION

The findings indicate that digital financial literacy significantly influences financial behaviour among Malaysian working adults. This suggests that a stronger understanding of digital financial services enables individuals to make more informed financial decisions, including effective budgeting, systematic saving, and prudent investment. Similarly, the adoption and effective use of financial technology (FinTech) tools were found to positively influence financial behaviour, highlighting the role of technological innovation in facilitating more efficient financial management practices.

The results further emphasise the importance of strengthening digital financial literacy, and encouraging responsible engagement with FinTech platforms among working adults in Malaysia. These factors collectively influence financial behaviour, which subsequently contributes to financial sustainability. Notably, the modest yet significant effect of FinTech usage indicates that technological access alone is insufficient to produce sustainable financial outcomes. Rather, the impact of FinTech depends on how individuals translate digital engagement into disciplined financial practices.

Overall, the study demonstrates that financial sustainability among Malaysian working adults is shaped by the interaction between digital capability, technological engagement, and behavioural discipline. These findings offer valuable insights for educators, financial service providers, and policymakers seeking to promote sustainable financial practices within an increasingly digital financial environment. From a policy perspective, the findings provide actionable implications for key stakeholders within Malaysia's financial ecosystem, including Bank Negara Malaysia (BNM), Agensi Kaunseling dan Pengurusan Kredit (AKPK), financial institutions, and employers. Strengthening behavioural capability and digital financial literacy may contribute to improved financial resilience among working adults (Hou et al., 2025). While institutions such as AKPK play

an important role in providing financial advisory services, conclusions regarding the utilisation of such services extend beyond the empirical scope of this study and should therefore be interpreted as broader policy considerations rather than direct findings.

First, given the significant influence of digital financial literacy on financial behaviour, policy initiatives should prioritise application-oriented digital financial capability development rather than general awareness campaigns (Breidbach et al., 2020). Bank Negara Malaysia could further enhance its National Strategy for Financial Literacy by integrating structured digital literacy modules that focus on practical competencies, including secure online banking practices, responsible use of buy-now-pay-later services, digital investment risk evaluation, and financial fraud detection. These modules should incorporate real-life financial decision scenarios faced by working adults and be delivered through multiple channels such as workplace training programmes, community-based financial education initiatives, and online micro-learning platforms.

Second, although FinTech usage demonstrated a positive relationship with financial behaviour, the relatively modest effect size suggests that technological adoption alone does not guarantee disciplined financial practices. Regulatory bodies and financial institutions could therefore incorporate behavioural reinforcement mechanisms within digital financial platforms (Moustati et al., 2024). For example, mobile banking applications could integrate automated savings features, real-time spending alerts, structured budgeting dashboards, and debt repayment reminders. Such behavioural nudges, grounded in behavioural economics principles, may encourage individuals to translate digital financial access into sustainable financial behaviour.

Furthermore, given that working adults constitute the primary unit of analysis in this study, employers represent an important channel for intervention. Both public and private organisations could incorporate structured financial wellness programmes within employee development frameworks. These initiatives may include financial planning consultations, digital budgeting tools integrated into employee portals, and periodic financial capability workshops. Workplace-based interventions could increase participation and reinforce the behavioural pathways identified in this study.

Although the present research did not directly examine debt burdens, financial advisory utilisation, or macroeconomic stress indicators, national reports consistently highlight financial resilience as an ongoing concern in Malaysia. Within this broader context, strengthening behavioural discipline, and digital financial capability may indirectly contribute to improved financial resilience among working adults. Nevertheless, the policy implications derived from this study remain grounded in the empirically tested relationships within the proposed research model.

LIMITATIONS OF THE STUDY

This study provides important insights into the relationships between digital financial literacy, FinTech, financial behaviour, and financial sustainability among Malaysian working adults. However, several limitations should be acknowledged when interpreting the findings.

First, the study employs a cross-sectional research design, which limits the ability to draw causal inferences. Although the proposed model is theoretically grounded, the estimated relationships should be interpreted as associations rather than causal effects. Unobserved individual characteristics such as cognitive ability, risk preferences, and time preferences may simultaneously influence digital financial literacy, FinTech, and financial behaviour. As such, the potential presence of endogeneity and omitted variable bias cannot be fully ruled out. Future research is encouraged to adopt longitudinal designs, experimental approaches, or instrumental variable techniques to establish causal relationships more rigorously.

Second, the study relies on self-reported survey data to measure financial behaviour and financial sustainability. While such measures are widely used in behavioural finance and financial capability research, they may be subject to response biases, including social desirability bias and recall error. Although steps were taken to minimise these issues, the possibility of measurement error remains. Future studies could strengthen the validity of findings by incorporating objective financial data, such as administrative records, transaction data, or credit information.

Third, the use of Partial Least Squares Structural Equation Modelling (PLS-SEM) is appropriate for examining complex relationships among latent constructs and for predictive modelling. However, PLS-SEM is fundamentally a variance-based approach and does not establish structural economic causality. Therefore, the findings should be interpreted within a predictive and associational framework rather than a strictly causal one. Future research may complement this approach with econometric methods that are better suited for causal inference.

Finally, although this study employed a multistage sampling approach to enhance representativeness, the sample is limited to Malaysian working adults aged 30 to 65. As such, the generalisability of the findings to other demographic groups, such as younger adults, retirees, or populations in different institutional contexts, may be limited. Future research could extend the analysis to other populations and cross-country settings to enhance external validity.

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