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Article

# Determinants of Financial Well-Being Among Malaysian University Students: The Role of Financial Behaviour as A Mediator

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**ABSTRACT -** The global issue of Financial Well-Being (FWB) among university students remains a contentious topic of discussion and growing concern. However, inconclusive findings necessitate a comprehensive understanding of potential antecedents to address this pressing issue. This study utilises psychological theories to examine the factors influencing FWB among university students, offering current insights and directions for future research. Data were collected from 299 Malaysian university students through an online survey and analysed using Partial Least Square-Structural Equation Modelling (PLS-SEM) via SmartPLS 4.0. The findings reveal that Digital Financial Literacy (DFL), financial confidence, and financial attitude significantly influence financial behaviour. In contrast, FWB is influenced by financial confidence and financial behaviour but not by DFL and financial attitude. Furthermore, financial behaviour successfully mediates the relationships between (i) DFL and FWB, (ii) financial confidence and FWB, and (iii) financial attitude and FWB. This study contributes to the growing literature on psychological theories and FWB, providing valuable insights for government, its agencies, regulators, and educational institutions. It highlights the need to enhance financial education curricula and awareness campaigns to foster positive financial habits and improve students' FWB.

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## INTRODUCTION

Achieving FWB does not depend on how much money one makes, how big one's property is, or whether one knows how to invest in the stock market, but rather on making informed financial decisions that bring peace of mind and allow one to live the life they desire. The benefits individuals gains from solid and sound financial decisions, such as increased wealth, reduced stress and greater overall satisfaction, can be passed down through generations, extend to communities and ultimately contribute to the broader economy. Therefore, FWB is essential for an individual's financial and economic security, the community and the global economy.

While attaining FWB is a widespread issue affecting individuals across all economic levels and life stages, it is especially acute among university students (Nawang & Shukor, 2023). One of the primary financial challenges they face is the burden of unpayable educational loans, which often lead to student defaults and long-term financial hardship, making it a growing global concern (Zolkeplee et al., 2018). As a result, developing financial acumen and achieving FWB are essential steps for university students to avoid excessive debt and financial hardship. Nevertheless, contemporary consumerism trends and patterns among university students present a challenge.

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They are compelled to increase their regular spending due to the allure of materialism and social media. Excessive spending on unnecessary items and impulse purchases, coupled with an extravagant lifestyle, has led many young people to resort to loans, resulting in early bankruptcy, an alarming trend given the statistics. In Malaysia, for instance, according to a report by the Malaysian Department of Insolvency, 75 out of those who filed for bankruptcy between 2020 and May 2024 were under 25 years old (Malaysian Department of Insolvency, 2024). This highlights the startling trend of young people filing for bankruptcy due to poor money management. Additionally, the Agensi Kaunseling dan Pengurusan Kredit (AKPK) also revealed that 53,000 young people aged 30 and below are burdened with nearly RM1.9 billion in debt (Agensi Kaunseling dan Pengurusan Kredit, 2024). This highlights the financial strain on young adults, who likely face substantial education loan debts, a major contributor to their overall financial burden. According to the National Higher Education Fund Corporation (Perbadanan Tabung Pendidikan Tinggi Nasional), a government agency that provides financial loans to Malaysian students for their higher education (Khairi, 2024), note that education loans are the second-largest debt category for this group (Khazanah Research Institute, 2024), with 430,000 borrowers defaulting and RM6 billion in outstanding debt. This ongoing debt delays key life milestones, such as buying a home or starting a family and defaults can result in higher interest rates, lower credit scores and broader economic consequences. The situation is further exacerbated by a dynamic economic environment characterised by high inflation, which significantly negatively influences their financial stability, compounding their ongoing predicament. Hence, the achievement of FWB remains a significant challenge for this segment.

One way to achieve FWB is by teaching basic financial concepts and developing financial aptitude early to instil good financial values in the young and lay the groundwork for adult FWB. A comprehensive financial management method must be taught, including skills related to budgeting, debt management, savings strategies, creditworthiness, investment knowledge, risk management and retirement planning. Otherwise, a less stable and secure financial future may await the younger generation, particularly university students lacking these skills. Numerous studies emphasise the importance of FWB, which is influenced by various determinants such as financial awareness, financial knowledge, financial attitude and financial behaviour (Hisham et al., 2023). However, only a few focus on DFL (Choung et al., 2023), despite the fact that modern society heavily relies on the internet and digital platforms.

Today's university students belong to Generations Y and Z, who were exposed to digital technology at a very young age, grew up with the internet and are both recognised as digital natives (DaCosta et al*.,* 2013; Hernandez-de-Menendez et al*.,* 2020). Therefore, their familiarity and ease with online banking and shopping are unsurprising. Nonetheless, assuming they possess all the requisite information, skills and understanding to navigate digital technology is inaccurate (Raj, 2021). Despite their status as digital natives, several studies have shown that this generation is more vulnerable to online scams. For instance, a study conducted by the Institute for the Public Understanding of Risk (IPUR) in 2022 revealed that people under 25 were 10% more likely than those aged 65 and older to fall victim to scams (Ng & Ng, 2022). This generation's overconfidence stems from the belief that their technological expertise makes them immune to harm or misfortune (Ng & Ng, 2022). In Malaysia, according to data from the Malaysian Ministry of Women, Family and Community Development, 26.2% of online scam victims between 2019 and 2021 were aged 20-30 (Mukhtar, 2024). Hence, the state of FWB within this segment remains unclear and inadequately addressed. Thus, comprehensive financial knowledge is crucial for today's young generation, as it extends beyond basic financial literacy to encompasses digital technology.

Digital financial services have grown rapidly in recent years, driven primarily by financial technology (fintech) and accelerated by the COVID-19 pandemic. Digital technology and fintech are transforming the financial landscape, enabling consumers worldwide to access a wider range of financial services and products that are more affordable and convenient. These rapid advancements in the digital financial sector necessitate that individuals possess sufficient and advanced DFL. It is an emerging concept that emphasises the knowledge and skills required to conduct financial transactions on digital platforms (Choung et al., 2023). As financial institutions increasingly transition to digital platforms, possessing DFL has become essential for individuals. The rapid expansion of fintech accentuates the importance of developing strong DFL, as it enables individuals to effectively use digital tools to manage their financial activities. DFL encompasses proficiency in digital platforms such as mobile payment apps, online banking and blockchain technology while emphasising the importance of financial cybersecurity in protecting sensitive personal and financial data, ensuring a secure and informed experience in the digital era (Bushra & Mir, 2024). Previous studies have shown that DFL plays a key role in promoting effective online financial management by empowering individuals to make informed and confident financial decisions, ultimately enhancing their FWB (Bhat et al., 2024; Kamble et al., 2024; Bushra & Mir, 2024). Therefore, DFL is an essential area of knowledge and skill that enables individuals to leverage technology to improve their financial outcomes.

For today's university students, DFL is particularly significant, as they belong to a generation highly engaged with technology and digital devices. In a world where financial products and services are increasingly digital, DFL equips them with the essential knowledge and skills to manage their finances in an environment where online banking, mobile payments, and investment platforms have become the norm. By mastering DFL, students are better prepared to navigate financial complexities and manage their finances more effectively by leveraging digital tools for budgeting, saving, investing and securing financial data. This digital financial knowledge empowers students to confidently navigate a complex, technology-driven financial landscape. Given its significance, exploring the role of DFL in enhancing FWB is essential.

This study builds on Respati et al.'s (2023) work, which examined the role of digital finance knowledge, financial confidence, financial attitude and financial behaviour in influencing FWB. Additionally, Respati et al. (2023) suggest that future studies should incorporate other variables as predictors of FWB. Thus, financial attitude is added to this study, with financial behaviour functioning as a mediator. DFL is an emerging field that requires further investigation, while financial confidence, attitude and behaviour have been extensively studied as determinants of FWB. However, the findings across studies remain inconsistent. Some research has identified a significant impact (Muat et al., 2024; Rafien et al., 2022; Setiyani & Solichatun, 2019), whereas others report no substantial effect on FWB (Björklund Engström & Puman, 2023; Sajuyigbe et al., 2024; Syaliha et al., 2022), indicating the need for further exploration. This inconsistency highlights the complexity of the relationship between these factors, which may evolve over time. By examining these variables within the current study context, a deeper understanding of their role in shaping long-term financial health can be achieved. Therefore, this study aims to explore the influence of these factors on FWB among university students and to emphasise the mediating role of financial behaviour.

## LITERATURE REVIEW

### Underpinning theories

Human behaviour is intricately shaped by actions, cognitions and emotions, making it a multifaceted and complex individual. Regardless of its intricacies, studying individuals is critical for creating a deeper understanding of their behaviour, which, in the context of this study, is how individuals make financial decisions. Moreover, several theories have been developed to understand and predict human behaviour. These include the well-known Theory of Reasoned Action (TRA) by Ajzen and Fishbein (1977) and the Theory of Planned Behaviour (TPB) by Ajzen (1991). Note that TRA and TPB are grounded on social psychological theory, which asserts that an individual's decision to engage in a particular behaviour is influenced by logical and reasoned thought processes and consider all available information (Kan & Fabrigar, 2017; Najmi et al., 2023; Suntornsan et al., 2022).

However, TRA and TPB have faced criticism due to their prominent presence in academic literature (Conner, 2020; Conner & Sparks, 2015). A key critique of these theories is their focus on rational and deliberative processes while neglecting the role of affective, emotional, non-conscious, or irrational factors in influencing human behaviour (Manstead, 2011). In response to these limitations, Ajzen (1991) proposes extending TRA and TPB to include external predictors beyond their original core components.

Despite the criticisms, both TRA and TPB remain flexible and adaptable, owing to their wide applicability, which allows them to be utilised across diverse fields and analytical contexts (Tommasetti et al., 2018). Consequently, these theories form the theoretical basis for this study, helping explain human behaviour concerning financial outcomes. In accordance with Ajzen's (1991) suggestion, external variables that encompass both emotional and rational aspects of financial decision-making are included, specifically DFL, financial confidence, financial attitude and financial behaviour, as key determinants of FWB. In the context of this study, it is posited that university students with a solid foundation in DFL, who exhibit high financial confidence, maintain positive financial attitudes and engage in healthy financial behaviours, are likely to exhibit a significant and positive influence on their FWB.

**Financial well-being**

FWB is a subjective concept that varies significantly among individuals. Therefore, there is no globally agreed-upon definition or measurement of this concept or clarity surrounding its conceptualisation and components. Nonetheless, scholars and practitioners have offered a variety of definitions. For example, Brüggen et al. (2017) describe FWB as "the perception of being able to sustain the current and anticipated desired living standard and financial freedom". Hasler et al. (2023) define FWB as "being and feeling financially secure in the short and long term and having the financial freedom to make choices that allow one to enjoy their life." According to the Consumer Financial Protection Bureau (2015), FWB is "a state wherein individuals can fully meet their current and ongoing financial obligations, feel secure in their financial future and be able to make choices that allow them to enjoy life". These definitions emphasise comparable themes such as the ability to meet financial obligations, financial stability, freedom of choice and enjoyment of life.

Investigating FWB in university students is essential, as various financial challenges can negatively impact their mental health, quality of life, academic achievement and job performance (Utkarsh et al., 2020). Furthermore, university students who have faced financial difficulties since childhood may continue to experience financial struggles in adulthood, which can ultimately affect their well-being, as well as their interpersonal and familial relationships (Shim et al., 2009).

Over the years, numerous studies have examined different factors that may impact FWB. Previous research has considered factors such as financial knowledge (Sobaih & Elshaer, 2023), financial attitude (Robb & Chy, 2023), financial behaviour (Respati et al., 2023), financial socialisation (Pak et al., 2023), locus of control (Radianto et al., 2021) and demographic traits (Sabri et al., 2022). Some studies have gone further by incorporating moderators (Sobaih & Elshaer, 2023) and mediators (Sabri et al., 2020; Sabri et al., 2022). All of these factors have been found to influence FWB in some way among young adults and university students. However, due to inconsistent findings, further research is needed to identify the actual determinants of FWB, including factors that may have yet to be explored in university students.

Considering that this study aims to investigate FWB among university students, a group primarily comprised of digital natives from Generations Y and Z, it is important to highlight the role of digital finance knowledge in facilitating their adoption of digital technology. Alongside DFL, this study suggests that financial behaviour, attitudes and confidence positively and significantly shape FWB among university students. Despite extensive research on the relationship between financial behaviour, financial attitudes and financial confidence and FWB (Carton et al., 2022; Magli et al., 2021; Sabri et al., 2022), the findings have been mixed, hence calling for additional research.

**Digital Financial Literacy**

The digital revolution, known as fintech, is transforming retail banking, investment and payment services, reshaping both the financial industry and personal money management habits as these technologies become more integrated into daily life and the economy (Koskelainen et al., 2023). Consequently, individuals must possess digital finance knowledge to effectively utilise fintech products and services, avoid wasteful spending and optimise financial decisions. DFL is an emerging concept that emphasises the knowledge and skills required to conduct financial transactions on digital platforms (Choung et al., 2023). Similarly, Choung et al. (2023) argue that traditional financial literacy alone is insufficient for achieving FWB in the digital economy, as it lacks a comprehensive approach that includes digital financial knowledge, practical skills and the ability to use digital financial instruments. Additionally, DFL enhances financial security by protecting individuals from cyber threats, further underscoring its importance in achieving FWB. DFL facilitates the efficient use of fintech products and services while helping individuals guard against digital fraud, such as phishing and hacking (Organisation for Economic Co-operation and Development, 2020). Moreover, it empowers individuals to participate in a cashless economy, thereby promoting financial inclusion (Ozili, 2018).

DFL also plays a crucial role in shaping financial behaviour among individuals. Ishak et al. (2022) demonstrated the impact of DFL on saving behaviour in their study of Malaysian students. Similarly, Setiawan et al. (2022) found that DFL had a positive and significant effect on financial behaviour among Indonesian millennials. Aryan et al. (2024) and Dube et al. (2023) reported comparable findings regarding DFL's influence on financial behaviour. A study by Choung et al. (2023) among Korean adults confirmed that DFL is associated with FWB. Likewise, Aulia et al. (2023) found that DFL predicts FWB among individuals in the West Sumatra region. However, Kumar et al. (2023) reported no significant association between DFL and FWB. Thus, the following hypotheses are put forth:

**H1**: DFL has a positive and significant influence on financial behaviour.
**H2**: DFL has a positive and significant influence on FWB.

**Financial confidence**

Financial confidence refers to an an individual's belief in their ability to make prudent financial decisions and effectively manage financial matters (Palameta et al., 2016). Higher financial confidence is associated with better financial management, as individuals with greater confidence tend to be more cautious in their financial decisions. A study by Ajemunigbohun and Ipigansi (2022) in Nigeria found that financial confidence significantly influences policyholders' risk attitudes, highlighting its importance in financial decision-making. Additionally, several studies indicate that individuals with greater confidence in their financial situation are more likely to make prudent financial choices, which positively affects both their financial behaviour (Morris et al., 2022) and FWB (Setiyani & Solichatun, 2019). Given these findings, fostering financial confidence in young individuals is essential, as higher confidence levels contribute to better financial decision-making and, ultimately, greater FWB. Therefore, the following hypotheses are deposited:

**H3**: Financial confidence has a positive and significant influence on financial behaviour.
**H4**: Financial confidence has a positive and significant influence on FWB.

**Financial attitude**

Financial attitude refers to an in dividual's inclination, thoughts, opinions, judgments, beliefs and feelings regarding financial matters (Rai et al., 2019), encompassing both favourable and unfavourable perspectives, as well as their ability to plan financially for the future. A positive financial attitude can significantly influence an individual's financial behaviour, whereas a negative attitude can weaken their decision-making ability (Shim et al., 2009; Khalisharani et al., 2022). Additionally, financial attitude is recognised as a key determinant of FWB. Previous studies by Bhatia and Singh (2023), Rafien et al. (2022) and Utkarsh et al. (2020) have identified a positive correlation between financial attitude and FWB, suggesting that maintaining a positive financial attitude is essential for achieving a good state of FWB. The abovementioned studies indicate that financial attitude significantly influences individuals' financial behaviour and FWB, leading to the following proposed hypotheses:

**H5**: Financial attitude has a positive and significant influence on financial behaviour.
**H6**: Financial attitude has a positive and significant influence on FWB.

**Financial behaviour**

Financial behaviour refers to the actions individuals take to manage their finances, including cash, savings, credit (Xiao, 2008) and investments. Financially responsible individuals are generally more effective in managing their finances, including budgeting, saving, spending, investing and meeting their financial obligations on time. Previous research has indicated that positive financial behaviour greatly enhances individuals' FWB (Muat et al., 2024; Rahman et al., 2021; Sabri et al., 2023; Shim et al., 2009). Therefore, adopting responsible financial behaviour contributes to happiness, peace of mind, and overall well-being.

Despite extensive research over the years using financial behaviour as a mediator, the findings remain inconclusive. Therefore, this study examines the mediating role of financial behaviour in the relationship between DFL, financial confidence, financial attitude and FWB. DFL equips individuals with the digital skills necessary to navigate financial domains effectively, promoting responsible money management and ultimately leading to FWB (Aulia et al., 2023; Muat et al., 2024). Financial confidence and financial attitude positively influence FWB by shaping financial behaviour, leading to excellent financial behaviour and financial prosperity in individuals (Setiyani & Solichatun, 2019). Based on the above discussion, it is assumed that financial behaviour might mediate the relationship between DFL and FWB, financial confidence and FWB, as well as financial attitude and FWB. Therefore, the following hypothesised are proposed:

**H7**: Financial behaviour has a positive and significant influence on FWB.
**H8**: Financial behaviour mediates the relationship between DFL and FWB.
**H9**: Financial behaviour mediates the relationship between financial confidence and FWB.
**H10**: Financial behaviour mediates the relationship between financial attitude and FWB.

**Conceptual framework**

Figure 1 illustrates the proposed research model for this study, developed based on the preceding comprehensive literature review.

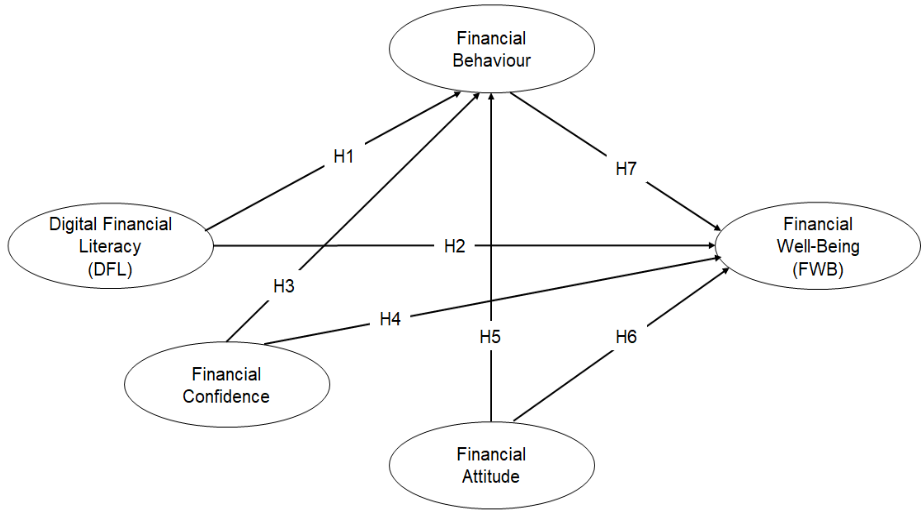


**Figure 1**: Proposed research model

## METHODOLOGY

### Sample

This study focuses on university students pursuing higher education in Malaysia's public and private universities. Data were collected through a structured questionnaire via an online survey. The survey link was shared on social media platforms such as WhatsApp and LinkedIn. The online survey method was chosen for its ability to efficiently, quickly and cost-effectively collect large volumes of data from a broad audience. Additionally, it incorporates validation features to ensure complete responses and address any missing data.

A non-probability convenience sampling technique was employed for respondent selection in this study. This method is widely used in marketing and consumer research due to its practicality and ease of implementation (Vomberg & Klarmann, 2022). It offers several advantages, including cost-effectiveness, time efficiency and simplicity in execution (Jager et al., 2017). Additionally, it provides convenient access to participants based on geographical proximity, specific time availability and willingness to volunteer (Dornyei, 2007). However, convenience sampling has notable limitations, including potential biases (Fricker, 2008) and limited external validity (Andrade, 2021), which may affect the generalisability of the findings to the broader population. Therefore, these limitations must be considered when interpreting the results and assessing their relevance within the study's context.

The sample size for this study was determined using Roscoe's (1975) widely accepted guidelines, which are frequently applied in social science research. According to Roscoe (1975), the optimal sample size for most behavioural studies falls between 30 and 500 respondents. Sample sizes exceeding 500 may heighten the risk of Type II errors. Therefore, selecting a sample size within this recommended range helps minimise Type II errors when testing the null hypothesis at the 0.05 significance level. Sekaran (2000) further supports Roscoe's (1975) guidelines, noting that excessively large sample sizes can yield statistically significant findings even for weak relationships, potentially distorting the true characteristics of the population. In line with Roscoe's (1975) recommendation, this study collected data from 299 respondents, which falls within the suggested range. Additionally, the sample of 299 respondents is considered adequate for multivariate analysis using PLS-SEM, based on the 10-times rule proposed by Hair et al. (2011). This rule suggests that the sample size should exceed ten times the maximum number of arrowheads pointing at any latent variable in the model, which in this study is seven.

**Ethical considerations**
Participants received an introduction before participating in the online survey. First, the study's objectives were clearly communicated. Second, respondents were assured that their responses would remain confidential and anonymous. They were also informed that participation was entirely voluntary and that they could withdraw at any time without consequences. Additionally, to ensure privacy and anonymity, no personal identifiers such as names, emails, or other identifying details were collected. Third, it was emphasised that there were no right or wrong answers, encouraging honest and genuine responses. Lastly, an estimated completion time was provided to help participants allocate sufficient time for the survey.

**Pilot test**
Prior to the main data collection, a pilot test was conducted (Devisakti & Ramayah, 2019) in two steps. First, the questionnaire underwent face and content validity assessment by three marketing experts. The selected respondents then completed the questionnaire to identify and address issues related to its design (Zikmund et al., 2013). Their feedback and recommendations were reviewed and the questionnaire was revised accordingly. However, no substantial revisions were required for this study. Second, the revised questionnaire was distributed to a sample of 30 respondents (Johanson & Brooks, 2010) and construct reliability was assessed using Cronbach's alpha score, calculated via the Statistical Package for Social Sciences (SPSS). Table 1 presents the pilot test results, showing that all Cronbach's alpha values exceed 0.7 (Nunnally, 1978; Zikmund, 2003), confirming the high reliability of the questionnaire and justifying the commencement of the main data collection.

**Table 1**: Pilot test Cronbach's Alpha

| Construct | No. of Item | Cronbach's Alpha |
|---|---|---|
| Financial Well-Being (FWB) | 3 | 0.851 |
| Digital Financial Literacy (DFL) | 12 | 0.972 |
| Financial Confidence | 3 | 0.915 |
| Financial Attitude | 4 | 0.928 |
| Financial Behaviour | 6 | 0.902 |

**Measurements**
The measurement items were adopted and adapted from previous research. Twelve items measured DFL, three measured financial confidence, six measured financial behaviour and three measured FWB, all sourced from Respati et al. (2023). Meanwhile, four items measuring financial attitude were derived from Loo et al. (2023). All items were rated on a five-point Likert scale, with 1 indicating strong disagreement and 5 indicating strong agreement.

**Data analysis**
The data for this study were analysed using SPSS and PLS-SEM. SPSS was used to examine the descriptive data, while PLS-SEM was used to test the hypotheses. PLS-SEM has been widely applied in various social sciences disciplines, including marketing research (Purwanto & Sudargini, 2021), due to its robustness (Risher & Hair, 2017). Additionally, PLS-SEM is more efficient and effective for small sample size (Fauzi, 2022), making it suitable for this study.

Hair et al. (2014) emphasise the significance of assessing construct validity to ensure the accuracy of a measure in evaluating a target variable. This is done using a two-step process that involves evaluating both the measurement model and the structural model. In the measurement model, data are analysed to determine the model's validity and reliability by examining internal consistency, construct validity and convergent validity. The structural model assess the significance and relevance of path coefficients, followed by evaluating the model's explanatory and predictive power.

Internal consistency, convergent validity and discriminant validity are critical markers when determining construct validity. The internal consistency is evaluated by measuring Cronbach's alpha and Composite Reliability (CR) scores. The convergent validity is assessed by examining factor loadings and Average Variance Extracted (AVE) values. The discriminant validity is measured by assessing the Fornell-Larcker criterion and the Heterotrait-Monotrait (HTMT) ratio of correlations.

## RESULT

### Demographic analysis

A total of 299 valid responses were obtained. Of the 299 respondents, 55.9% were female and 44.1% were male. In terms of ethnicity, a large proportion of respondents (71.2%) were Malays, followed by Chinese (17.1%) and Indians (11.7%). Age-wise, most of the responders were between 19 and 25 years old (87.3%), which is appropriate to represent university students in this study. Meanwhile, a significant proportion (87.6%) of the respondents are from public universities. Regarding education level, 80.6% of respondents are pursuing a bachelor's degree. The details of the respondents' profiles are presented in Table 2.

**Table 2**: Respondents' profile

| Demographic | Category | Frequency | Percentage |
|---|---|---|---|
| Gender | Male | 132 | 44.1 |
| | Female | 167 | 55.9 |
| Ethnic | Malay | 213 | 71.2 |
| | Chinese | 51 | 17.1 |
| | Indian | 35 | 11.7 |
| Age | 18 and below | 8 | 2.7 |
| | 19 – 25 | 44 | 87.3 |
| | 26 – 30 | 26 | 8.7 |
| | 31 and above | 4 | 1.3 |
| Higher Education Institution | Public | 262 | 87.6 |
| | Private | 37 | 12.4 |
| Educational Level | Pre-University | 6 | 2.0 |
| | Diploma | 45 | 15.1 |
| | Bachelor Degree | 241 | 80.6 |
| | Master/PhD | 7 | 2.3 |

### Measurement model assessment: Construct validity

Table 3 demonstrates that every construct met the requirements for convergent validity and internal consistency, including factor loadings larger than 0.5 (Byrne, 2013), AVE values greater than 0.5 (Ramayah et al., 2018), Cronbach's alpha greater than 0.7 (Nunnally, 1978) and CR values exceeding 0.7 thresholds (Hair et al., 2019).

**Table 3**: Convergent validity

| Constructs | Items | Outer Loading | Cronbach's Alpha | CR | AVE |
|---|---|---|---|---|---|
| Digital Financial Literacy | DFL1 | 0.871 | 0.980 | 0.982 | 0.821 |
| | DFL2 | 0.870 | | | |
| | DFL3 | 0.903 | | | |
| | DFL4 | 0.924 | | | |
| | DFL5 | 0.938 | | | |
| | DFL6 | 0.923 | | | |
| | DFL7 | 0.946 | | | |
| | DFL8 | 0.851 | | | |
| | DFL9 | 0.938 | | | |
| | DFL10 | 0.866 | | | |
| | DFL11 | 0.913 | | | |
| | DFL12 | 0.923 | | | |
| Financial Confidence | FC1 | 0.895 | 0.883 | 0.927 | 0.810 |
| | FC2 | 0.901 | | | |
| | FC3 | 0.904 | | | |
| Financial Attitude | FA1 | 0.907 | 0.928 | 0.949 | 0.823 |
| | FA2 | 0.905 | | | |
| | FA3 | 0.912 | | | |
| | FA4 | 0.905 | | | |
| Financial Behaviour | FB1 | 0.841 | 0.933 | 0.948 | 0.751 |
| | FB2 | 0.878 | | | |
| | FB3 | 0.881 | | | |
| | FB4 | 0.811 | | | |
| | FB5 | 0.911 | | | |
| | FB6 | 0.873 | | | |
| Financial Well-Being | FWB1 | 0.873 | 0.876 | 0.924 | 0.801 |
| | FWB2 | 0.917 | | | |
| | FWB3 | 0.895 | | | |

The discriminant validity was assessed using the Fornell-Larcker criterion and HTMT discriminant criteria. According to Fornell and Larcker (1981), discriminant validity is demonstrated when the squared correlations between any two latent constructs are less than the AVE of each latent construct. Table 4 presents the Fornell-Larcker test results, indicating that all constructs exhibit strong discriminant validity and distinctiveness, as each construct's AVE is greater than its squared correlation with any other construct.

**Table 4**: Discriminant validity: Fornell-Larcker test

| Construct | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1. DFL | **0.906** | | | | |
| 2. FC | 0.680 | **0.900** | | | |
| 3. FA | 0.841 | 0.728 | **0.907** | | |
| 4. FB | 0.840 | 0.756 | 0.867 | **0.867** | |
| 5. FWB | 0.580 | 0.732 | 0.644 | 0.710 | **0.895** |

**Note**: Diagonals represent the square root of the AVE, while the other entries represent the correlations.

Table 5 summarises the findings of the HTMT discriminant criteria. The result revealed that all construct pairs were less than 0.90, except for financial behaviour and financial attitude, which had a value slightly higher than the required threshold. The HTMT value was tested using bootstrapping to determine if it significantly differed from 1.00, indicating the absence of discriminant validity (Henseler et al., 2015). The bootstrapping test revealed that no upper 95%

confidence interval bounds contained a 1.00 value. All things considered, this study passed the measurement model assessments.

**Table 5**: Discriminant validity: HTMT test

| Construct | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1. DFL | | | | | |
| 2. FC | 0.729 | | | | |
| 3. FA | 0.882 | 0.802 | | | |
| 4. FB | 0.876 | 0.831 | 0.930 | | |
| 5. FWB | 0.624 | 0.830 | 0.710 | 0.783 | |

**Structural Model Assessment: Hypotheses Testing**

The proposed relationships were tested through the bootstrapping process following an assessment of the measurement model and confirmation of its fit. The process was carried out using the parameters that Hair et al. (2022) recommended, which included 5,000 subsamples, a 0.05 significance level and accelerated and bias-corrected confidence interval methods.

The table presents the result of the proposed structural model in terms of the path coefficient standard error and t-statistics. Out of 10 hypotheses, two hypotheses were not supported. Both DFL (H2) and financial attitude (H6) demonstrated non-significant effect on FWB, with (β=-0.145, t=1.866, p=0.062) and (β=0.046, t=0.571, p=0.568) respectively. A significant correlation was observed between DFL and financial behaviour (β=0.328, t=5.831, p=0.164), confirming H1. H3 was supported by the strong correlation (β=0.218, t=5.360, p=0.000) between financial behaviour and financial confidence. The direct impact of financial confidence on financial behaviour was found significant (β=0.462, t=7.824, p=0.000), which supports H4. Financial behaviour and attitude were significantly correlated (β=0.432, t=6.742, p=0.000), supporting hypothesis H5. It was discovered that financial behaviour influences FWB (β=0.443, t=5.077, p=0.000), proving that H7 is supported.

**Table 6**: Summary of hypotheses testing direct relationship

| Hypothesis and Path | | Std. Beta | Std. Error | t-value | p-value | $f^2$ | Decision |
|---|---|---|---|---|---|---|---|
| H1 | DFL → FB | 0.328 | 0.056 | 5.831 | 0.000 | 0.164 | Supported |
| H2 | DFL → FWB | -0.145 | 0.078 | 1.866 | 0.062 | 0.013 | Not Supported |
| H3 | FC → FB | 0.218 | 0.041 | 5.360 | 0.000 | 0.117 | Supported |
| H4 | FC → FWB | 0.462 | 0.059 | 7.824 | 0.000 | 0.217 | Supported |
| H5 | FA → FB | 0.432 | 0.064 | 6.742 | 0.000 | 0.249 | Supported |
| H6 | FA → FWB | 0.046 | 0.080 | 0.571 | 0.568 | 0.001 | Not Supported |
| H7 | FB → FWB | 0.443 | 0.087 | 5.077 | 0.000 | 0.091 | Supported |

Table 7 presents the results of the mediation effect of financial behaviour. The relationship between DFL, financial behaviour and FWB was significantly correlated (β = 0.146, t = 3.620, p = 0.000), indicating partial mediation, supporting H8. The association between financial confidence and FWB was fully mediated by financial behaviour (β = 0.097, t = 3.882, p = 0.000), providing strong support for H9. Additionally, financial behaviour significantly mediated the relationship between financial attitude and FWB (β = 0.191, t = 4.005, p = 0.000), suggesting partial mediation and confirming H10.

Furthermore, bootstrapping procedures were also used to assess the significance of the mediation hypotheses, following the guidelines of Preacher and Hayes (2008). This method calculates the confidence interval's lower and upper bounds to evaluate the significance of the indirect effects. A mediation effect is considered significant if the confidence interval does not include zero (Preacher & Hayes, 2008). In the case of H8, H9 and H10, the confidence intervals did not include zero, confirming that the mediation effects are significant. The results suggest that financial behaviour is a significant mediator in the relationships between DFL and FWB, financial confidence and FWB and financial attitude and FWB.

**Table 7**: Summary of hypotheses testing for indirect relationship

| Hypothesis and Path | | Std. Beta | Std. Error | t-value | p-value | LCI | UCI | Decision |
|---|---|---|---|---|---|---|---|---|
| H8 | DFL → FB → FWB | 0.146 | 0.040 | 3.620 | 0.000 | 0.087 | 0.222 | Supported |
| H9 | FC → FB → FWB | 0.097 | 0.025 | 3.882 | 0.000 | 0.124 | 0.286 | Supported |
| H10 | FA → FB → FWB | 0.191 | 0.048 | 4.005 | 0.000 | 0.061 | 0.144 | Supported |

The evaluation of the structural model in this study also involved assessing the Coefficient of Determination ($R^2$) and Effect Size ($f^2$). Figure 2 presents the complete estimates of the structural model. The theoretical model, which includes four control variables, explains 81.5% ($R^2 = 0.815$) of the variance in FWB. Additionally, 59.9% ($R^2 = 0.599$) of the variance in FWB is explained by DFL, financial confidence, attitude and behaviour. Overall, the model's explanatory power ranges from 0.599 to 0.815, surpassing the 0.35 threshold that Cohen (1988) recommended, indicating that the model has substantial explanatory strength. The $f^2$ measures the influence of exogenous constructs on the endogenous construct, assessing the significance of each variable's impact (Ramayah et al., 2018). An $f^2$ value of 0.02 indicates a small effect size, 0.15 represents a medium effect size and 0.35 signifies a large effect size (Cohen, 1988). Table 6 shows that the relationships between financial behaviour and FWB explain these constructs from a small to a medium extent.

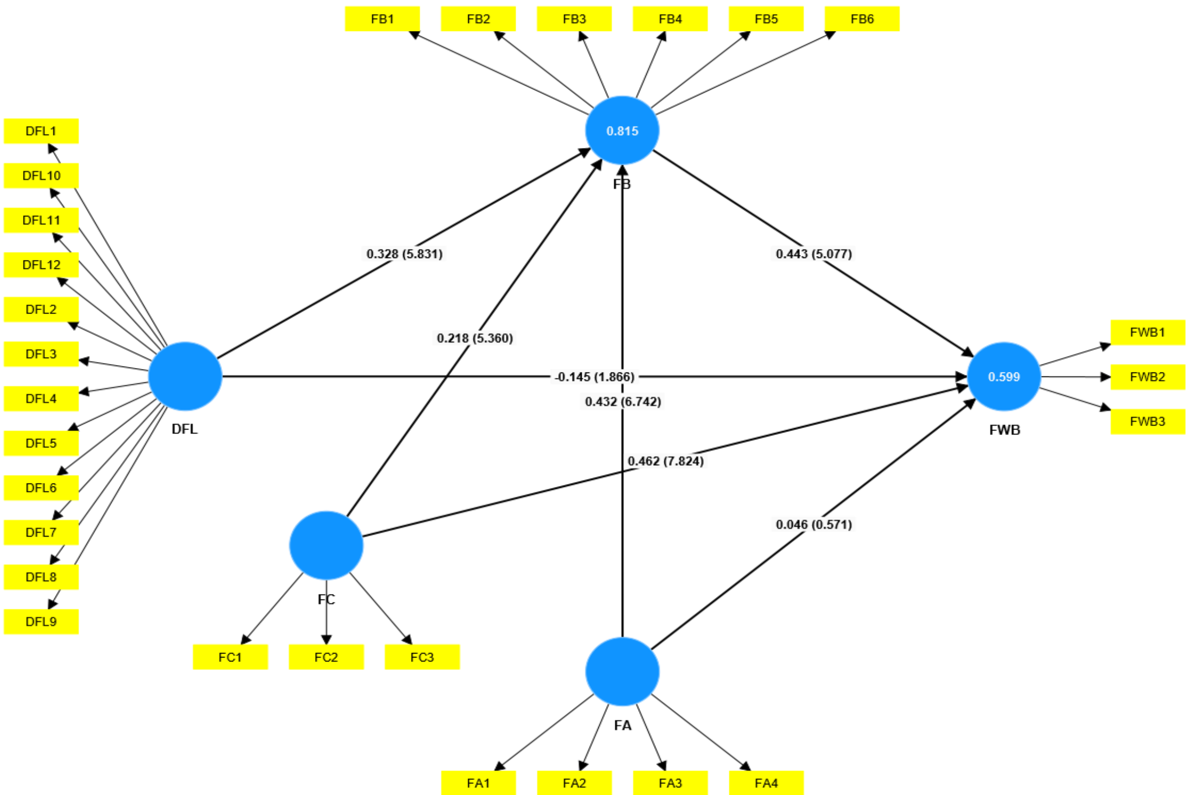


**Figure 2**: Results of structural model

## DISCUSSION

This study examined the key predictors of FWB among Malaysian university students by analysing DFL, financial confidence, attitude and behaviour. The results indicated that two of the ten hypotheses were found to be unsupported. H1 and H2 hypothesised that DFL positively and significantly affects financial behaviour and FWB. The findings suggest that individuals proficient in using digital financial products and services tend to be more financially responsible, effectively managing their finances through budgeting, analytical skills and financial acumen. This aligns with previous research findings (Aryan et al., 2024; Dube et al., 2023; Ishak et al., 2022; Setiawan et al., 2022). In the context of university students, DFL has been shown to positively influence financial behaviour, as students with higher digital financial knowledge make more informed and responsible financial decisions, particularly when using digital tools to budget tuition fees and manage daily personal expenses effectively.

However, the study found a negative and insignificant relationship between DFL and FWB, contradicting previous studies by Aulia et al. (2023) and Choung et al. (2023) but aligning with Kumar et al. (2023). The lack of a significant correlation between DFL and FWB may be attributed to a gap between theoretical knowledge and its practical application (Barus et al., 2024; Susanti & Khadaffi, 2024). While, students may have a strong understanding of digital financial tools, their ability to effectively manage finances in practice may be limited by factors such as a lack of financial experience, inconsistent use of financial digital tools and external pressures, including financial dependency or insufficient income. These barriers may weaken the direct impact of DFL on FWB, particularly during the transitional phase of university life, when students face challenges in fully applying their financial knowledge.

On the other hand, H3 and H4 examine the direct effects of financial confidence on financial behaviour and financial confidence on FWB. The study found a positive and statistically significant association between financial confidence and financial behaviour, as well as sbetween financial confidence and FWB. These findings align with previous studies by Ajemunigbohun and Ipigansi (2022), Morris et al. (2022) and Setiyani and Solichatun (2019), which concluded that individuals with higher confidence are more circumspect, adept at handling financial matters and financially secure and resilient. University students with greater financial confidence tend to exhibit proactive and responsible financial behaviours, such as increased saving, budgeting and future expense planning. These behaviours contribute to improved FWB, fostering better financial management and reducing the likelihood of financial difficulties both during their academic journey and as they transition into adulthood.

H5 and H6 examine the direct relationship between financial attitude and financial behaviour, as well as between financial attitude and FWB. This study found a strong positive correlation between financial attitude and financial behaviour. This finding aligns with earlier research by Shim et al. (2009) and Khalisharani et al. (2022), which concluded that a positive financial attitude can significantly influence an individual's financial behaviour. Students with a positive financial attitude are more likely to adopt sound financial practices, such as effective expense management, minimising unnecessary debt and saving for future goals. These practices foster greater financial stability and well-being, not only during their university years but also in later stages of life.

Nevertheless, there is no statistically significant association between the direct effects of financial attitude on FWB, which contrasts with the findings of previous studies by Bhatia and Singh (2023), Rafien et al. (2022) and Utkarsh et al. (2020). The insignificant relationship between financial attitude and FWB may stem from a discrepancy between students' positive attitudes toward money and their actual financial behaviours. While students may hold healthy financial attitudes, they might struggle to implement sound financial practices due to various f developmental, situational and contextual factors that constrain the direct influence of financial attitudes on their financial outcomes. Furthermore, even with a positive mindset, students may find it challengling to translate attitudes into outcomes if they feel a lack of control over their finances or face economic pressures (Zaki et al., 2020) that limit their FWB.

H7 examines the direct effects of financial behaviour on FWB. The results indicate a positive and statistically significant relationship between financial behaviour and FWB, aligning with previous research findings (Muat et al., 2024; Rahman et al., 2021; Sabri et al., 2023; Shim et al., 2009). These findings suggest that sound financial management practices, such as budgeting, saving, investing and fulfilling financial commitments, are key to happiness, contentment and overall well-being. Essentially, students who manage their expenditures wisely, avoid debt and make well-informed financial decisions are more likely to achieve long-term financial stability throughout their studies and as they transition into independent adulthood.

H8-H10 investigate the mediating effects of financial behaviour on DFL, financial confidence, financial attitude and FWB. The study found that financial behaviour successfully mediates the relationships between DFL, financial confidence and financial attitude with FWB. These findings are consistent with previous studies (Aulia et al., 2023; Muat et al., 2024; Setiyani & Solichatun, 2019). The results align with the rationale articulated by Aulia et al. (2023) and Choung et al. (2023), which suggests that knowledge of digital finance can reduce financial mistakes, prevent loan defaults and guide portfolio diversification, ultimately leading to improved FWB. Additionally, the findings highlight that a positive financial attitude and confidence contribute to stronger financial behaviour, fostering greater financial responsibility and enhancing FWB, which reinforces the conclusions of Setiyani and Solichatun (2019). When students develop sound financial habits, such as budgeting and debt management, they are better prepared to achieve financial stability, make informed decisions and effectively navigate financial challenges. This, in turn, strengthens their financial competence and prepares them for full financial independence.

The findings of this study challenge and extend existing theories on FWB and its related constructs, particularly in the context of university students. While previous studies have asserted that DFL, financial confidence, financial attitude and financial behaviour all directly impact FWB, this study offers a more nuanced perspective. It reveals that although financial confidence and financial behaviour directly influence FWB, DFL and financial attitude alone do not significantly affect FWB among students. This suggests that merely possessing digital financial knowledge or holding certain attitudes toward money is insufficient to improve FWB directly. Instead, the study highlights the mediating role of financial behaviour, indicating that positive financial behaviours, such as budgeting, saving and managing money, are crucial for translating digital financial knowledge and financial attitudes into improved FWB. These findings call for a shift in financial education, not only emphasising the enhancement of DFL and financial attitudes but also fostering the development of practical financial behaviours.

## CONCLUSION

This study is unique in incorporating DFL as a key factor in examining FWB, an area that, despite its growing prominence, remains underexplored due to the recent emergence of digital finance. As digital financial tools become increasingly integral to personal finance management, understanding how DFL influences FWB is crucial. This study highlights the key factors influencing FWB among university students, emphasizing the roles of DFL, financial confidence and a positive financial attitude. The findings indicate that students with strong DFL demonstrate greater financial responsibility, leading to improved FWB. Among these factors, financial confidence emerges as the most significant predictor, as confident students tend to manage their finances more effectively. Additionally, the study underscores the importance of a positive financial attitude, which is essential for responsible money management and overall FWB. These findings suggest that fostering responsible financial behavior, alongside enhancing DFL and financial confidence, is vital for promoting FWB.

Theoretically, this study extends TRA- and TPB-based models by identifying financial behavior as a key mediator between DFL, financial attitude and FWB. The findings indicate that adequate DFL, high financial confidence and a positive financial attitude directly influence financial behavior, which, in turn enhances FWB. The study's novel contribution lies in conceptualizing financial behavior as a mediator, offering deeper insights into the mechanisms shaping financial outcomes and underscoring the importance of mediation in understanding the complex relationships between knowledge, attitudes, behaviors and FWB.

From a practical perspective, the study offers valuable insights for enhancing the FWB of university students through improved DFL and responsible financial behavior. It suggests that universities should integrate digital finance course into their curricula to strengthen students' financial literacy and encourate responsible financial practices. Governments can support these efforts by launching nationwide DFL campaigns and providing incentives, such as scholarships, for students who complete financial literacy programs. By equipping students with the skills to navigate digital financial tools and manage their finances effectively, these initiatives can foster better financial habits, reduce financial insecurity and contribute to a more financially responsible society and economy.

This study has several limitations that present opportunities for future research. First, while it extends TRA and TPB by identifying key factors influencing FWB among university students, further research is needed to explore the evolving nature of FWB and its long-term implications. Future studies could incorporate additional behavioral theories, such as social influence theory, to better understand how peer groups, social media and family shape financial attitudes and behaviors. Second, the study's cross-sectional design limits causality; therefore, longitudinal research could provide deeper insights into changes in FWB over time. Additionally, a mixed-methods approach, integrating quantitative and qualitative data, would offer a more nuanced understanding of personal, cultural and socio-economic factors influencing financial decision-making. Lastly, expanding the scope to include diverse demographic groups, such as working adults, senior citizens, women and individuals from various cultural backgrounds, would enhance understanding of how DFL affects different populations and inform the development of more inclusive financial education programs.

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