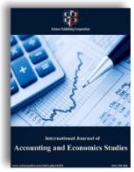
International Journal of Accounting and Economics Studies, 12 (3) (2025) 327-335

International Journal of Accounting and Economics Studies

Website: www.sciencepubco.com/index.php/IJAES
https://doi.org/10.14419/2ff0xq28
Research paper



An Analysis of Financial Literacy and Financial Well-Being in Relation to Sustainable Development Goals (SDGs) Among Women Entrepreneurs in The Federal Territory of Putrajaya, Malaysia

Muhammad Syukri Abdullah [1], Vani Tanggamani [2], Azlina Rahim [2 *], Hamidah Bani [2], Mohd Mas Rizat Abdul Latif [2], Masrina Nadia Mohd Salleh [1]

[1] Faculty of Economics and Management, The National University of Malaysia, Malaysia
[2] Faculty of Accountancy, Universiti Teknologi MARA Cawangan Melaka, Malaysia
**Corresponding author E-mail: azlina@uitm.edu.my*

Received: June 11, 2025, Accepted: July 11, 2025, Published: July 30, 2025

Abstract

Introduction: The topic of financial literacy has garnered significant attention from both governmental bodies and individuals. Numerous studies have been conducted regarding financial literacy. Several studies have examined the relationship between financial literacy and financial behavior, revealing that financial literacy significantly influences financial behavior.
Objectives: The study attempts to examine the financial literacy and financial well-being among women entrepreneurs in the Federal Territory of Putrajaya, Malaysia, by aligning with SDG1, SDG8, and SDG10. There are two dimensions in financial literacy (financial behavior and financial attitude), while financial knowledge as a moderator is included in the current study.
Methods: This study investigates the key determinants of financial well-being among a sample of 75 women entrepreneurs in the Federal Territory of Putrajaya, Malaysia. Using a quantitative approach, the researchers employed structured partial least squares modelling with SmartPLS version 4 software. A stratified random sampling technique, followed by quota sampling, was utilized to ensure equitable representation of the population. The measurement questions were adopted from prior research and adapted to suit the context of this study.
Results: This study highlights that all variables play a crucial role in influencing the financial well-being of women entrepreneurs in the Federal Territory of Putrajaya, Malaysia. Therefore, all antecedent factors must be considered as they impact their financial well-being.
Conclusions: Future research should focus on the wide spectrum of women entrepreneurs in Malaysia to improve their financial well-being as well as Malaysia's performance in economic growth. By understanding the relationship between financial literacy dimensions and financial knowledge, women entrepreneurs can better enhance their financial well-being.

Keywords: *Financial Well-Being; Financial Behavior; Financial Attitudes; Financial Knowledge; Sustainable Development Goals (SDGs).*

1. Introduction

As global economies have significantly contracted into recession, financial well-being has emerged as a prominent area of research (Ngamaba et al., 2020). The topic of financial literacy has garnered significant attention from both governmental bodies and individuals (Zainuddin et al., 2024). Financial literacy refers to the capacity of individuals to accurately process economic information and make informed decisions. This understanding encompasses concepts such as wealth accumulation, debt, and pensions (Lusardi and Mitchell 2014), enabling individuals to make sound financial choices and enhance their financial well-being (Garg and Singh 2018; Santini et al. 2019). Recent years have seen a heightened significance of financial literacy, primarily attributed to shifts in the economic-political landscape that resulted in the deregulation of financial markets and facilitated the emergence and expansion of advanced financial products (Lusardi 2019). The enhancement of financial markets has facilitated access to a wide range of financial services, allowing individuals to save, invest, obtain loans, and amass sufficient resources for daily financial management (Kelkar, 2010). Numerous studies have demonstrated that financial literacy enhances the utilization of financial services (Chaulagain, 2015; Cole et al., 2011; Atkinson & Messy, 2013). Financial literacy serves as a crucial measure of an individual's financial capability.
Vaidya and Ramesh (2021) assert that insufficient financial literacy among users has been recognized as a contributing factor to the global financial crisis. Financial literacy levels among Malaysians remain inadequate (Zainuddin et al., 2024). Research indicates that over 69 percent of individuals prefer spending money rather than saving it, resulting in insufficient savings for emergencies (Tayep, 2024). Abd Rahman et al. (2020) support this statement, indicating that a total of 64,633 individuals were declared bankrupt by the Credit Counselling and Debt Management Agency (AKPK) due to the crisis, which led to their inability to repay personal, housing, and business loans. In 2022, the Department of Insolvency Malaysia reported that 247,407 individuals were declared bankrupt (Aslinda, 2022).

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Numerous studies have been conducted regarding financial literacy. Several studies have examined the relationship between financial literacy and financial behavior, revealing that financial literacy significantly influences financial behavior (Morgan et al., 2019; Henager and Cude, 2016; Azlan et al., 2015; Wangmo, 2018). Subsequent studies examined the correlation between financial literacy and financial well-being, revealing that financial literacy significantly impacts financial well-being (Taft et al, 2013; Batra, 2013; Mandel and Klein, 2009; Kabeer, 2020; Haue & Zulfiqar, 2015). Moreover, numerous studies have sought to establish connections among financial literacy, financial behavior, and financial well-being. Financial literacy influences financial wellbeing via financial behavior (Adam et al., 2017; Rahman et al., 2021; Younas et al., 2019).
Thus, this study would like to investigate the level of financial literacy on financial well-being among women entrepreneurs in the Federal Territory of Putrajaya. This study highlights the necessity for women entrepreneurs to possess financial literacy to effectively manage their businesses and achieve superior entrepreneurial status.

2. Literature review

2.1. Financial well-being among women

In Malaysia, women's financial behaviour and financial well-being have become increasingly important research areas, reflecting the country's evolving socioeconomic landscape and the growing recognition of women's crucial role in household financial management and national economic development (Lajuni et al., 2018). Understanding the nuances of financial behaviour among women is essential for creating targeted policies and interventions that promote financial literacy, reduce financial distress, and enhance overall financial well-being (Yanto et al., 2021). Financial literacy, encompassing financial knowledge, skills, and attitudes, has been linked to various economic behaviours, including retirement planning and wealth accumulation, making it a critical factor for long-term financial security (Bucher-Koenen et al., 2016).
Given that women tend to live longer than men, improving their financial literacy is particularly important for ensuring their financial preparedness for retirement and promoting their overall financial security. Women's longer life expectancy compared to men means they are more likely to experience widowhood, underscoring the need to enhance their financial knowledge and skills to manage their finances effectively throughout their lifetime and secure their financial well-being in retirement (Bucher-Koenen et al., 2016). Furthermore, women in Malaysia are also actively involved in entrepreneurship, but a significant proportion of them still lack solid financial literacy, hindering their ability to achieve financial well-being, particularly among women entrepreneurs (Jaffar et al., 2024).
Prior studies have examined the factors influencing financial literacy and their effects on financial well-being. A study focused on the financial well-being of women in Malaysia revealed that financial literacy has a positive correlation with financial well-being (Das, 2025; Jaffar et al., 2024; Bhatia & Singh, 2023; Choung et al., 2023). An examination of the financial knowledge and behavior of working adults in Malaysia found that financial illiteracy was common among both genders and all age groups (Abidin et al., 2023; Sundarasen et al., 2023; Azeez & Akhtar, 2021). A study examining the spending behavior of Asian university students revealed that most students did not possess the essential skills to manage their finances effectively, underscoring the necessity for enhanced financial literacy (Alkan et al., 2020). A recent investigation into the elements affecting financial literacy among college students in Malaysia found that education and attitudes towards money were key predictors of financial literacy, whereas financial socialization agents showed no significant correlation (Nahar et al., 2022). Referring to the study conducted by Gonçalves & Ahumada (2025) in an examination of the financial knowledge and behavior of working adults in Malaysia, it was found that financial illiteracy was prevalent across gender and age groups. However, education, ethnicity, profession, and the availability of government pensions emerged as significant factors influencing financial knowledge (Sabri et al., 2023). Moreover, although financial practices like budgeting, investing, and emergency planning were shaped by financial knowledge, experiencing financial distress did not have an impact (Boylu et al., 2019).
A study focused on the financial well-being of women in Malaysia revealed that financial literacy has a positive correlation with financial well-being (Jaffar et al., 2024; Mahesha, 2023; Sundarasen et al., 2023). Additionally, it highlighted notable differences between the Malay and Chinese ethnic groups in this context. (Md.Shafik & Ahmad, 2020). An investigation into the financial well-being of older Malaysians indicated that male participants exhibited greater financial literacy, monetary attitudes, and financial practices than their female counterparts. (Tan & Singaravelloo, 2019). The results indicate that financial literacy is a multifaceted topic, influenced by a range of socioeconomic and demographic elements that contribute to individuals' understanding and actions regarding finances. Considering the significance of financial literacy and well-being for women in Malaysia, it is essential to delve deeper into the factors that influence these outcomes and create focused interventions to tackle the current gaps.

2.2. Financial well-being

Financial well-being (FWB) has been defined in multiple ways by scholars. Muir et al. (2017) defined financial well-being (FWB) as the ability of an individual to meet expenses, retain surplus funds, maintain control over finances, and experience a sense of financial security both presently and in the future. Kempson and Poppe (2018) defined financial well-being (FWB) as the degree to which an individual can fulfill their current obligations and needs comfortably, while possessing the financial resilience to sustain this capability in the future.
A widely accepted definition of financial well-being, which captures the subjective sense of one's financial state, has been absent, hampering efforts to deeply examine the financial domain (Netemeyer et al., 2017). Such a definition and measure would support policy efforts to improve financial well-being (Netemeyer et al., 2017). Financial well-being can be conceptualized as the degree to which individuals feel confident and secure about their ability to meet current and future financial obligations, pursue financial goals, and enjoy a sense of financial freedom (Brüggen et al., 2017). This encompasses not only the objective aspects of income, savings, and debt but also the subjective perceptions of financial security, satisfaction, and control (Collins & Urban, 2019). An individual's current and anticipated desired living standard and financial freedom are linked to the perceptual perspective of financial well-being (Brüggen et al., 2017).
Research indicates that financial well-being is distinct from general subjective well-being and financial literacy, especially when considered across the life course (Collins & Urban, 2019). It also goes beyond traditional measures of income and wealth, encompassing psychological and behavioral dimensions that influence how individuals manage their finances and perceive their financial situation. A standardized financial well-being score generally tracks income, wealth, and participation in investment markets, as well as markers of positive and negative financial behavior (Collins & Urban, 2019). Financial well-being can be a useful construct to include in new surveys but can also be proxied in existing public datasets, as demonstrated using separate survey data (Collins & Urban, 2019).

A study on college students in Malaysia examined the financial well-being of women, revealing a positive correlation between financial literacy and financial well-being. Additionally, significant differences were observed between the Malay and Chinese ethnic groups in this context (Md. Shafik & Ahmad, 2020). A study examining the financial well-being of older Malaysians indicated that male respondents exhibited greater financial literacy, monetary attitudes, and financial practices than their female counterparts (Tan & Singaravelloo, 2019). Research on the financial literacy and well-being of women in Malaysia suggests that there are significant gender disparities, with women often lagging behind men in terms of financial knowledge, attitudes, and behaviors (Abidin et al., 2023). The existing literature highlights the importance of addressing these disparities and promoting financial empowerment among women in Malaysia to enhance their overall financial well-being (Hamid et al., 2023). The research on financial literacy and well-being among women in Malaysia paints a complex and multifaceted picture, revealing significant gender-based differences in these domains.

2.3. Financial literacy

A common definition defines financial literacy as the capacity or competence in managing personal finances. It involves the capacity to understand, evaluate, manage, and discuss personal financial circumstances. From a larger perspective on financial services, financial literacy is defined as the management of income and expenses, as well as essential financial and banking services, including bank accounts and associated goods. Financial literacy is defined as the ability to effectively utilize knowledge and skills in managing financial resources to achieve financial stability throughout an individual's life (Madinga et al., 2022; Mitra & De, 2024).

Financial literacy, defined as the ability to understand and effectively use various financial skills, including personal financial management, budgeting, and investing, is a key determinant of financial well-being. Previous studies in Malaysia have found that financial literacy is related to financial well-being, and that there are important differences between the Malay and Chinese ethnic groups in the country (Sabri et al., 2023). According to the literature, financial literacy not only benefits individuals but also affects a nation's economy (Sabri et al., 2023). Financial literacy, defined as the capacity to comprehend and utilize diverse financial skills such as personal financial management, budgeting, and investing, is an essential life skill. Nevertheless, it poses a considerable challenge for women worldwide, including in Malaysia (Lusardi, 2019). Financial literacy enables individuals to effectively plan for their future, manage financial risks, and prevent issues such as excessive debt and fraud (Agu et al., 2024). Individuals with financial literacy are more capable of enhancing the economic welfare of their communities and nations, as they tend to adopt prudent financial practices that foster economic growth and stability (Agu et al., 2024).

Financial literacy levels are critically low in numerous regions globally, with research indicating substantial disparities in financial knowledge and skills among various populations (Agu et al., 2024). Research indicates that women exhibit lower levels of financial literacy compared to men (Azeez & Akhtar, 2021). Financial illiteracy is prevalent globally, particularly among women and older individuals (Azeez & Akhtar, 2021). In Hungary, men are generally more financially literate and informed than women (Szikszai et al., 2024). In Pakistan, a significant proportion of working women exhibit financial illiteracy, with approximately one-third demonstrating knowledge of financial services and products (Sundarasen et al., 2023). Research indicates that women generally possess less financial expertise compared to men, and this disparity is recognized by women themselves (Mahesha, 2023).

Financial literacy, encompassing the comprehension and application of financial principles, plays a crucial role in shaping entrepreneurial intent and the subsequent creation of sustainable businesses, further impacting the overall success of small to medium-sized enterprises (Alshebami & Marri, 2022; Utomo et al., 2020). Mabyakto (2017) found that financial attitude does not influence student financial literacy, financial behavior influences student financial literacy, and financial attitude and financial behavior simultaneously influence student financial literacy. Thus, individuals' attitudes, behaviors, knowledge, and understanding of financial issues can all be considered components of financial literacy, and this comprehensive understanding is essential for making sound financial decisions, well-being and managing resources effectively (Lone & Bhat, 2022).

2.4. Financial behavior

This study identified financial behavior as one of the important dimensions of financial well-being. Financial behavior is one of the key dimensions that contributes to financial literacy, and this, in turn, can lead to improved financial well-being. An individual's financial behaviors, such as budgeting, saving, investing, and debt management, play a crucial role in shaping their overall financial situation and sense of financial security. Cultivating positive financial behaviours that align with one's financial goals, values, and available resources is essential for achieving a greater sense of financial well-being and overall economic security (Thomas & Gupta, 2021). Moreover, financial behavior serves as a critical link between financial literacy and financial well-being, highlighting the significance of translating knowledge into action. Financial well-being is not solely determined by external economic factors; it is also significantly shaped by individual financial behaviors and attitudes.

Financial behaviour has been found to have a significant direct impact on an individual's financial well-being (Bai, 2023). Studies have shown that positive financial behaviours, such as budgeting, saving, and responsible debt management, are closely associated with a greater sense of financial security and overall financial well-being. Positive financial behaviors are strongly associated with higher levels of financial well-being (Collins & Urban, 2019).

Conversely, negative financial behaviors, such as overspending, excessive borrowing, and neglecting financial planning, can undermine financial security and erode overall well-being (Rehman & Mia, 2024). Conversely, maladaptive financial behaviours, encompassing tendencies toward excessive expenditure, imprudent accumulation of debt, and negligence in proactive financial planning, are demonstrably correlated with heightened financial anxiety and a reduced perception of economic contentment (Mansor et al., 2022). Hence, the following hypothesis was formulated:

H1: Financial behavior has a positive relationship with financial well-being among women entrepreneurs in the Federal Territory of Putrajaya, Malaysia.

2.5. Financial attitude

Financial attitude encompasses the psychological inclination of an individual towards evaluating financial management, reflecting their agreement or disagreement with specific financial practices (Winarta & Pamungkas, 2021). It represents the individual's overall disposition and mindset regarding financial matters, which can significantly influence their financial decision-making and subsequent well-being. Financial attitude encompasses a person's beliefs, feelings, opinions, and overall psychological disposition regarding money, finances, and

financial matters (Furnham, 2025). It reflects the individual's inherent mindset, values, and perspectives when it comes to financial management and decision-making (Riitsalu et al., 2023).

An individual's financial attitude has been shown to significantly predict their financial well-being, suggesting that a positive financial attitude is associated with a greater sense of financial well-being (Hakim et al., 2018). Additionally, research has confirmed that financial attitude has a significant relationship with an individual's financial well-being (Lone & Bhat, 2022). This indicates that an individual's overall attitude towards financial matters can play a crucial role in determining their overall financial well-being and security.

However, the relationship between financial attitude and financial well-being is not as straightforward as it may seem (Bai, 2023). Some studies have suggested that an individual's financial attitude may not always be a reliable predictor of their financial well-being (Sabri et al., 2023). An overly optimistic or complacent attitude towards financial matters, for instance, could lead to poor financial decisions and ultimately undermine an individual's financial security (Nwosu & Ilori, 2024). Therefore, while financial attitude may play a role in shaping financial well-being, other factors, such as financial behaviours, knowledge, and external circumstances, should also be considered when examining an individual's overall financial health and stability. Hence, it was postulated that:

H2: Financial attitude has a positive relationship with financial well-being among women entrepreneurs in the Federal Territory of Putrajaya, Malaysia.

2.6. Financial knowledge

Financial knowledge encompasses an individual's understanding of a broad range of financial principles and concepts, including but not limited to saving, investing, borrowing, and insurance (Mansor et al., 2022). This comprehensive financial knowledge allows individuals to better assess their financial status, understand broader economic conditions, and make more informed decisions while navigating the potential risks associated with financial matters (Rapina et al., 2023).

Financial knowledge is a fundamental requirement for individuals to effectively manage their finances and avoid potential financial problems. As research has shown, possessing a comprehensive understanding of financial principles and concepts, such as saving, investing, borrowing, and insurance, enables people to make more informed decisions regarding their financial well-being (Widyakto et al., 2022). This broad financial knowledge empowers individuals to assess their current financial status accurately, comprehend broader economic conditions, and navigate the potential risks associated with financial matters judiciously. Cultivating this essential financial knowledge is crucial for individuals to achieve greater financial security and stability in the long run.

Financial knowledge is essential for effective money management and decision-making (Remund, 2010). An individual's depth of financial knowledge and understanding is a key determinant of their overall financial well-being (Remund, 2010). Possessing a comprehensive grasp of essential financial principles, concepts, and practices such as budgeting, saving, investing, borrowing, and risk management empowers individuals to make more informed, prudent, and strategic decisions regarding the management of their financial resources. This deeper level of financial literacy enables individuals to better assess their current financial standing, anticipate potential risks, and navigate economic conditions in a manner that fosters long-term financial security, stability, and growth. By cultivating this robust financial knowledge, individuals can develop the necessary skills and confidence to effectively plan, execute, and monitor their financial decisions, ultimately contributing to their overall financial well-being and economic resilience (Remund, 2010).

Financial knowledge has a significant relationship with financial well-being (Bhatia & Singh, 2023; Mansor et al., 2022). Possessing financial knowledge reduces anxiety, financial conflicts, child exploitation, and family conflicts. Other than that, there is a significant relationship between financial knowledge and financial well-being among individuals (Mansor et al., 2022). Individuals with greater financial knowledge and a better sense of financial well-being tend to experience less job-related distress and report higher levels of job satisfaction and contentment. This positive relationship between financial literacy and overall professional well-being has been consistently observed in various studies (Bhatia & Singh, 2023). Therefore, individuals must cultivate the requisite knowledge, information, and skills to judiciously evaluate available options and identify those that optimally align with their specific needs and prevailing circumstances (Remund, 2010).

An individual's financial attitude may not always be a reliable predictor of their financial well-being (Bai, 2023). An overly optimistic or complacent attitude towards financial matters, for instance, could lead to poor financial decisions and ultimately undermine an individual's financial security. Therefore, while financial knowledge plays a role in shaping financial well-being, other factors, such as financial behaviours and external circumstances, should also be considered when examining an individual's overall financial health and stability (Białowolski et al., 2021). Hence, the following hypothesis was formulated:

H3: Financial behavior has a positive relationship with financial well-being, moderated by financial knowledge among women entrepreneurs in the Federal Territory of Putrajaya, Malaysia.

H4: Financial attitude has a positive relationship with financial well-being, moderated by financial knowledge among women entrepreneurs in the Federal Territory of Putrajaya, Malaysia.

3. Methods

This research employs a descriptive research design. The descriptive approach is intentionally utilised to investigate or gather comprehensive information about the current situation, and it also serves as the "blueprint" for the research. The rationale for adopting this method is to describe the characteristics of financial literacy by collecting data through the distribution of questionnaires to the participants. The design of this study will provide an understanding of the relationships that exist among the variables involved.

This study employed a quantitative research methodology, and the data were gathered through a physical survey of 75 women entrepreneurs based in the Territory of Putrajaya, Malaysia. A stratified random sampling approach was utilized to segregate the population according to the state of the business location, followed by quota sampling to ensure equitable representation of certain groups. Participants were asked to indicate their level of agreement with each statement using a 6-point Likert scale. In total, 27 items were employed to measure four variables. The data underwent structured partial least squares modeling analysis, with Smart PLS version 4 statistical software utilized for this process. This study adopted measurement questions from prior research and adapted them to suit the context of this study. Six-point Likert scales ranging from strongly disagree to strongly agree were utilized to measure the variables. Before using the measurement scales, their reliability was assessed, which was then followed by an evaluation of their validity. Validity refers to the ability of a scale to measure what it is intended to measure. In this instance, the questionnaire serves as the primary tool for gathering data from the respondents.

In this research model, financial well-being was conceptualised as the dependent variable. The research model incorporated a carefully selected set of independent variables that were examined for their potential influence on individuals' future financial intentions and decision-making.

4. Results

The study examined a sample of 75 women entrepreneurs in Putrajaya, Malaysia, providing a detailed examination of their demographic characteristics and professional profiles. This in-depth analysis offers valuable insights into the specific backgrounds and business experiences of the respondents, which can inform tailored support and policy initiatives to empower this important entrepreneurial population.

4.1. Demographic profile of respondents

The demographic profile provided an overall view of the characteristics of the respondents. As depicted in Table 1 below, the sample seems to be skewed towards a younger demographic, with over half (52%) of respondents between 21 and 40 years old. This is important to consider, as financial priorities and concerns often shift with age. Furthermore, followed by age between - years old with 22.67%, age > 51with 14.66% and < 20 with 10.67%. There were 65.33% Malay women entrepreneurs involved in this study, followed by Chinese (20.00%), indian (13.33%), and others (1.33%).

Table 1: Distribution of Respondents by Demographic Variables

Demographic Variables	Frequency	Percent
AGE (YEARS)		
< 20	8	10.67%
21 – 40	39	52.00%
41 – 50	17	22.67%
> 51	11	14.66%
Missing	0	0
RACE		
Malay	49	65.33%
Chinese	15	20.00%
Indian	10	13.33%
Others	1	1.33%
Missing	0	0

Source: Author's own work.

4.2. Professional profile of respondents

The nature of business of these women entrepreneurs is in "services" represents the largest category (44%), followed by "retailing" (18.67%), "clothes and apparel" (20.00%), "others" (10.66%), and "foods and beverages" (6.67%). In terms of education level, the majority of them were graduates with 46.67% possessing a high school certificate, 24% holding other certificates, and 16% were diploma holders. The remaining 12.00% were bachelor's degree holders, and 1.33% completed postgraduate level. It is important to know about their professional profile because these people will be better at leveraging subjective well-being to realize higher financial well-being. Their diverse backgrounds and industry experiences equip them with the necessary skills and insights to navigate the complexities of building and managing successful businesses. By leveraging their subjective well-being, these women are empowered to realize higher levels of financial well-being, contributing to their overall economic security and independence. Their entrepreneurial journeys serve as inspiring examples of how professional development and personal growth can go together in achieving financial stability and fulfillment.

Table 2: Professional Respondents

Professional Profile	Frequency	Percent
NATURE OF BUSINESS		
Foods and beverages	5	6.67%
Services	33	44.00%
Retailing	14	18.67%
Clothes and apparel	15	20.00%
Others	8	10.66%
Missing	0	0
EDUCATION LEVEL		
High School	35	46.67%
Diploma	12	16.00%
Bachelor	9	12.00%
Postgraduate	1	1.33%
Other certificates	18	24.00%
Missing	0	0

Sources: Author's work.

4.3. Assessment of the structural model

The impacts of the constructs outlined in the proposed model were evaluated using the coefficient of determination (R2), (β), effect size ($f2$), and predictive relevance (Q2). As shown in Table 3, the results indicate that all the hypotheses posited in the study were supported by empirical evidence.

Table 3: Structural Model Parameters

Path	β	p-value	*f*2	Hypotheses
Financial Behavior → Financial Well-being	0.27	< 0.01	0.17	H1: Supported
Financial Attitude → Financial Well-being	0.21	< 0.01	0.18	H2: Supported

Source: Author's work.

H1: Financial behavior has a positive relationship with financial well-being among women entrepreneurs in the Federal Territory of Putrajaya, Malaysia.
Hypothesis 1 proposed a positive relationship between financial behavior and financial well-being. As shown in Table 3, the standardized path coefficient was significant at $\beta = 0.27$. Furthermore, p-value was ($p < 0.01$). The findings indicated that the participating women entrepreneurs demonstrated a robust comprehension of financial principles and exhibited fiscally responsible practices in the management of their business operations, which in turn supported their overall financial well-being. Since the result was significant, hypothesis 1 was supported.
H2: Financial attitude has a positive relationship with financial well-being among women entrepreneurs in the Federal Territory of Putrajaya, Malaysia.
Hypothesis 2 posits that there is a positive relationship between financial attitude and financial well-being. As shown in Table 3, the standardized path coefficient was significant at $\beta = 0.21$. Furthermore, p-value was ($p < 0.01$). This explained that the research found that the participating women entrepreneurs exhibited a positive financial attitude, which in turn fostered their broader financial well-being. Since the result was significant, hypothesis 2 was supported.

4.4. Result for financial knowledge as moderator

Next, the relationship between the moderator (financial knowledge) and the dependent variable was tested with the moderated model. The moderated structural models established the significance of the relationships between the moderator and dependent variable. This study explores the use of financial knowledge as a moderating variable. Partial Least Squares—Multigroup Analysis (PLS-MGA), which offers a more rigorous approach to assessing the moderating role of financial knowledge and financial well-being, is a suitable approach as recommended by Cheah et al. (2020). This method is a useful way to look at the differences between groups in the data. Ultimately, it helps to find out which differences in the estimates are important and statistically significant (Sarstedt et al., 2014). This can be explained when the level of financial knowledge is higher; thus, the relationship between financial behavior and financial attitude with financial well-being will be strengthened.
Overall, the results found that financial knowledge is significant in moderating the relationship between financial behavior and financial attitude with financial well-being among women entrepreneurs in the Federal Territory of Putrajaya, Malaysia. This implies that financial knowledge plays a crucial role in shaping the impact of financial behaviour and financial attitude on financial well-being among women entrepreneurs in Putrajaya.

Table 4: Moderating Effect Using PLS-MGA Analysis

Path	Difference (Financial Knowledge)	p-value	Hypotheses
Financial Behavior → Financial Well-being X Financial Knowledge	0.229	< 0.01	H3: Supported
Financial Attitude → Financial Well-being X Financial Knowledge	0.398	< 0.01	H4: Supported

Source: Author's work.

H3: Financial behavior has a positive relationship with financial well-being, moderated by financial knowledge among women entrepreneurs in the Federal Territory of Putrajaya, Malaysia.
Hypothesis 3 predicted that financial behavior and financial well-being will be moderated by financial knowledge. The result shows the differences were 0.229, and the p-value was <0.01). The findings indicate that financial behaviour and financial well-being were significantly moderated by financial knowledge. This suggests that the higher the level of financial knowledge, the stronger the relationship between financial behaviour and financial well-being. Since the result was significant, hypothesis 3 was supported.
H4: Financial attitude has a positive relationship with financial well-being, moderated by financial knowledge among women entrepreneurs in the Federal Territory of Putrajaya, Malaysia.
Hypothesis 4 predicted that financial attitude and financial well-being will be moderated by financial knowledge. The result shows the differences were 0.398, and the p-value was <0.01. The study found that financial attitude and financial well-being were significantly moderated by financial knowledge. This indicates that the higher the level of financial knowledge, the stronger the relationship between financial attitude and financial well-being. Since the result was significant, hypothesis 4 was supported.

5. Discussion & conclusions

This study aims to enhance the understanding of financial well-being among women entrepreneurs by exploring financial behaviour and financial attitude as independent variables, with financial knowledge as a moderating factor. The research contributes to the growing body of literature on women's entrepreneurship and personal finance, providing empirical evidence on the factors that drive financial well-being in this specific demographic (Kanapathipillai et al., 2021). The findings of this study may have significant implications for policymakers, financial institutions, and entrepreneurship support organizations looking to empower women entrepreneurs and promote their long-term financial security.
The findings suggest that the relationship between financial behaviour and financial well-being is significantly moderated by the level of financial knowledge possessed by women entrepreneurs. In other words, the positive impact of sound financial behaviours on financial well-being is amplified when entrepreneurs have a stronger grasp of financial concepts, skills, and decision-making abilities. This highlights the crucial role that financial literacy plays in empowering women entrepreneurs to achieve greater financial security and prosperity. By enhancing their financial knowledge, women can make more informed decisions, manage their finances more effectively, and ultimately experience higher levels of financial well-being, even in challenging economic environments. Financial knowledge, combined with positive financial behavior, plays a crucial role in achieving financial well-being, with the adoption of a healthy financial attitude being paramount (Bhatia & Singh, 2023; Yahaya et al., 2019). This suggests that individuals who possess financial literacy and a positive outlook are more

likely to translate that knowledge into effective actions, leading to improved financial outcomes (Bhatia & Singh, 2023; Yahaya et al., 2019).

The study found that financial attitude and financial well-being were significantly moderated by financial knowledge. From a practical standpoint, these findings highlight the importance of designing and implementing targeted financial education programs to support women entrepreneurs, especially among young adults in Malaysia (Sabri et al., 2023). Providing women entrepreneurs with opportunities to improve their financial literacy, skills, and decision-making abilities could lead to improved financial outcomes and a greater sense of financial well-being, especially in the challenging economic landscape following the COVID-19 pandemic (Kanapathipillai et al., 2021). These programs should be designed to address the specific needs and challenges faced by women entrepreneurs, considering their unique cultural contexts and business environments.

This study examines the key determinants of financial well-being among women entrepreneurs in Putrajaya, Malaysia. The findings highlight the crucial role of financial knowledge in moderating the relationships between financial behaviour, financial attitude, and financial well-being. By enhancing financial literacy, women entrepreneurs can make more informed decisions, manage their finances effectively, and experience higher levels of financial well-being, even in challenging economic environments. The study underscores the importance of tailored financial education programs to support women entrepreneurs, particularly in the post-COVID-19 context, to address their unique needs and challenges. Financial education programs such as workshops, training sessions, and mentorship programs that focus on enhancing financial literacy, skills, and decision-making abilities should be in place. Such initiatives could also promote the exchange of best practices and peer-to-peer support among women entrepreneurs, further strengthening their capacity to navigate financial challenges and achieve their business goals.

The research findings strongly suggest that financial behaviour, financial attitude, and financial knowledge are indeed key determinants of financial well-being among women entrepreneurs, which in turn has a positive impact on the Sustainable Development Goals. Specifically, by enabling women entrepreneurs to bolster their financial well-being, this study actively contributes to poverty reduction and the fostering of economic inclusion, thereby directly addressing SDG 1, which is focused on eradicating poverty in all its manifestations. Empowering women entrepreneurs financially leads to job creation, economic expansion, and improved working environments, which significantly contribute to the advancement of SDG 8. Moreover, SDG 10 seeks to diminish inequalities within and among countries. The outcomes of this research contribute to the reduction of gender disparities and the promotion of equitable opportunities for women in the business realm, aligning seamlessly with SDG 10.

None of the studies undertaken is without limitations, and this research is no exception. One key limitation was that several of the women entrepreneurs approached were reluctant to participate, even after receiving detailed explanations before the distribution of the questionnaire. Their demanding schedules and business commitments meant they were unable to allocate time to take part in the data collection process. This reduced the overall sample size and potentially limited the breadth of perspectives incorporated in the findings. Overcoming challenges in securing the full engagement of busy entrepreneurs is an ongoing obstacle in conducting research within this domain. Future studies may need to explore alternative strategies to encourage greater participation from this hard-to-reach target group.

Additionally, the study's geographical focus was limited to the Federal Territory of Putrajaya, Malaysia, which may restrict the generalisability of the findings to the broader Malaysian context. This geographical restriction means the results may not fully capture the diverse experiences and financial practices of women entrepreneurs across the different states and regions of Malaysia. The financial behaviours and levels of financial knowledge among women entrepreneurs could vary significantly between urban centres like Putrajaya and more rural or semi-rural areas of the country. As such, caution is warranted when attempting to extrapolate the study's conclusions to the national level, as the unique characteristics of the Putrajaya sample may not be representative of the wider population of Malaysian women entrepreneurs. Future research would benefit from a broader geographical scope to provide a more comprehensive understanding of the financial acumen and wellness of this important business demographic throughout Malaysia. Thus, to offer a more holistic and representative view, future studies should include women entrepreneurs from other regions or states in Malaysia, such as urban or rural areas.

The findings of this study suggest that financial well-being is a complex and multifaceted construct, influenced by various factors beyond just financial behaviours and attitudes. Future research would benefit from exploring additional potential antecedents and determinants of financial well-being among women entrepreneurs. This could include investigating the potential influence of demographic characteristics, entrepreneurial motivations, business performance metrics, and broader socioeconomic factors. A more holistic and nuanced understanding of the drivers of financial well-being would enable the development of more targeted interventions and support mechanisms to empower women entrepreneurs and foster their long-term financial security and prosperity. By uncovering the full range of variables that shape financial well-being, future studies can provide valuable insights to policymakers, financial institutions, and entrepreneurship support organisations seeking to enhance the financial resilience of this important business community.

Additionally, future research could employ a mixed-methods approach, as this study focused solely on quantitative methods. Using a mixed-methods design would enhance the validity and reliability of the findings, providing a more robust understanding of women entrepreneurs' financial well-being. Furthermore, longitudinal data would be beneficial in future studies. This approach offers several advantages, including the ability to track the same sample over time, gather long-term data, measure within-sample changes, capture different events, and record their timing. Adopting a longitudinal perspective would enable researchers to develop a more nuanced and detailed picture of the key determinants of financial well-being.

Acknowledgement

The authors would like to express their appreciation to Universiti Teknologi MARA Cawangan Melaka for the financial support provided in accomplishing this research under the TEJA Internal Grant Scheme 2024 (GDT2024/1-5).

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