



Enhancing Financial Resilience Among Malaysian Senior Citizens: Islamic Finance Mechanisms and the Moderating Role of Saving Behaviour

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Abstract

As Malaysia rapidly transitions towards an ageing nation, ensuring the financial well-being of older adults has become a critical socio-economic challenge. This study investigates the key determinants of financial resilience among Malaysian older adults, focusing on the effects of financial literacy, healthcare expenditure, and social support, while examining saving behaviour as a moderating factor. A quantitative research design was employed using primary data collected through a structured survey of 321 older adults selected via convenience sampling. The data were analysed using SPSS 22 and Partial Least Squares Structural Equation Modelling (PLS-SEM) through SmartPLS 4. The structural model explains 51.8% of the variance in financial resilience. The findings indicate that healthcare expenditure has a significant negative effect on financial resilience, while saving behaviour and social support have significant positive effects. In contrast, financial literacy does not have a significant direct effect on financial resilience. Moderation analysis further reveals that saving behaviour significantly strengthens the relationship between financial literacy and financial resilience, whereas it does not significantly moderate the relationships between healthcare expenditure and financial resilience or between social support and financial resilience. These findings suggest that financial knowledge alone may be insufficient to enhance financial resilience unless translated into active saving practices. Furthermore, saving behaviour alone may not adequately mitigate the financial pressures associated with healthcare expenditure. The study therefore highlights the need for integrated policy frameworks that combine individual financial capability with institutional support mechanisms. In this regard, Islamic social finance instruments, particularly waqf, zakat, and takaful, can serve as complementary institutional safety nets to strengthen the long-term financial security and resilience of Malaysia's ageing population.

Keywords: Financial Resilience; Senior Citizens; Saving Behaviour; Healthcare Expenditure; Islamic Finance; Micro-Takaful.

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1. Introduction

Malaysia is undergoing a significant demographic transition, marked by a rapidly ageing population driven by declining birth rates, increasing life expectancy, and advances in healthcare. In 2020, 10.3% of Malaysians were aged 60 years and above. This proportion is projected to increase to 15.3% by 2030 and 23.6% by 2050 (Bernama, 2020), positioning Malaysia as an aged nation by 2030. This demographic shift presents significant challenges to economic productivity, fiscal sustainability, and social equity (KWAP, 2024). While population ageing reflects improvements in living conditions and healthcare, it also exposes financial vulnerabilities among older adults, particularly through rising healthcare costs, inadequate retirement savings, and weakening traditional family support structures. Older adults account for approximately 40% of Malaysia's total healthcare expenditure, amounting to RM9.32 billion annually, which places considerable pressure on both household finances and public healthcare systems (Manaf et al., 2021). Consequently, shifting the academic and policy focus from merely addressing financial distress to proactively strengthening financial resilience is increasingly important.

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Existing research identifies healthcare expenditure, financial literacy, and social support as important factors associated with financial well-being among older adults (Leung et al., 2022; Al-Shaghdari et al., 2025). Recent evidence from Malaysia indicates that medical costs, saving behaviour, and social support significantly influence financial vulnerability among B40 older adults, whereas financial literacy does not exhibit a significant direct relationship with financial vulnerability (Al-Shaghdari et al., 2025). These findings highlight the importance of saving behaviour in shaping financial security. However, Malaysian studies have primarily examined saving behaviour as a direct determinant of financial vulnerability rather than investigating its potential to alter the strength of relationships between other socio-economic determinants and financial resilience. Accordingly, its moderating role remains underexplored, particularly regarding whether saving behaviour alters the relationships between financial literacy, social support, healthcare expenditure, and financial resilience. This distinction is theoretically important because financial resilience depends not only on the availability of financial knowledge and social resources but also on an individual's ability to translate these resources into accumulated financial buffers capable of absorbing unexpected expenditure shocks. Therefore, the present study extends the literature by conceptualising saving behaviour as a moderator of these key socio-economic relationships among Malaysian older adults.

To address this research gap, this study empirically tests whether saving behaviour moderates the relationships between healthcare expenditure, financial literacy, social support, and financial resilience among older adults in Malaysia. This provides empirical evidence on the conditional role of saving behaviour in shaping financial resilience within an ageing population. Beyond its empirical contribution, the study draws on Islamic finance principles to propose policy-oriented mechanisms designed to support the financial well-being of older adults. The findings offer valuable insights for policymakers, financial institutions, healthcare providers, and other stakeholders seeking to strengthen the financial security and quality of life of Malaysia's ageing population. Furthermore, the study aligns with broader national priorities, including the Madani Economic Framework, and contributes to the achievement of relevant United Nations Sustainable Development Goals (SDGs). The remainder of this paper is structured as follows. Section 2 reviews the relevant literature and establishes the study's theoretical foundations, including perspectives on financial resilience, saving behaviour, and Islamic social finance. Section 3 details the research methodology, encompassing the study design, sampling strategy, data collection procedures, and analytical approach. Section 4 reports the empirical findings, while Section 5 discusses the results and their implications. Section 6 presents the study's theoretical contributions, practical implications, and limitations. Finally, Section 7 concludes the paper by providing policy recommendations and directions for future research.

2. Literature Review

2.1 Theoretical Foundation

This study draws on four complementary theoretical perspectives to explain financial resilience among older adults in Malaysia: Life Cycle Theory, Social Support Theory, the Health Economics perspective, and Contingency Theory. Each perspective provides a distinct rationale for the relationships examined in the empirical model. Life Cycle Theory (LCT) explains how individuals allocate income between consumption and saving over the course of their lives. The theory suggests that individuals make financial decisions based on their expected lifetime resources, including the accumulation and utilisation of savings across different stages of life (Modigliani & Parkin, 1975; Lusardi & Mitchell, 2011). In the context of an ageing population, LCT provides a basis for understanding the importance of financial literacy and saving behaviour in retirement preparation and later-life resource management. Financial literacy may support informed financial planning, while saving behaviour reflects the practical accumulation and preservation of financial resources needed to maintain financial stability when income becomes relatively fixed.

Social Support Theory provides a framework for examining the role of interpersonal and community resources in helping individuals cope with stressful circumstances. Social support may take emotional, informational, and instrumental forms and can originate from family members, friends, community organisations, and broader social networks (Cohen & Wills, 1985; Thoits, 2011). For older adults, such support may include financial assistance, help with healthcare and daily living expenses, information relevant to financial decisions, and emotional support during periods of financial difficulty. These resources may strengthen individuals' capacity to cope with adverse circumstances and, consequently, contribute to financial resilience. The Health Economics perspective provides a basis for understanding the relationship between healthcare expenditure and financial resilience. Healthcare needs generally increase with age, while income during retirement may become relatively fixed. Consequently, substantial or unexpected healthcare expenditure may reduce disposable income, draw down accumulated savings, and leave fewer financial resources available to meet subsequent needs. This perspective therefore provides a theoretical basis for expecting a negative association between healthcare expenditure and financial resilience. Finally, Contingency Theory provides the principal theoretical basis for the moderating role of saving behaviour. The theory proposes that outcomes may depend on the interaction between contextual conditions and behavioural responses rather than on individual factors operating independently (Luthans & Stewart, 1977; Donaldson, 2001).

Applied to the present study, the financial resilience of older adults may depend not only on their levels of financial literacy, healthcare expenditure, and social support but also on how saving behaviour conditions these relationships. Saving behaviour may therefore strengthen or weaken the association between socio-economic factors and financial resilience. Collectively, these four perspectives provide the theoretical foundation for examining both the direct determinants of financial resilience and the conditional role of saving behaviour. Islamic finance mechanisms are incorporated subsequently as a contextual and policy-oriented framework through which the empirical findings can be translated into potentially relevant Shariah-compliant policy responses.

2.2 Financial Resilience

Financial resilience refers to the capacity of individuals or households to anticipate, absorb, cope with, and recover from financial shocks while maintaining an acceptable level of financial well-being (Rayampatt & Rajan, 2025). Although closely related to financial vulnerability, the two concepts reflect distinct dimensions of financial security. Financial vulnerability generally concerns an individual's exposure or susceptibility to financial shocks, whereas financial resilience emphasises the capacity to withstand and recover from such shocks (Lusardi et al., 2020). Previous research has examined financial vulnerability through indicators including financial fragility, insufficient financial resources, excessive debt, and difficulties in meeting unexpected expenses (Lusardi et al., 2020; Mahdzan et al., 2020; Seldal & Nyhus, 2022). A resilience-oriented perspective shifts attention from the mere absence of financial resources towards the capabilities, resources, and behaviours that enable individuals to maintain financial stability during periods of adversity. This perspective is particularly relevant to older adults because their financial circumstances may be influenced by relatively fixed post-retirement income, accumulated wealth, inflation, healthcare needs, and the gradual depletion of retirement resources. Financial resilience during later life may therefore depend on a combination of financial capabilities, behavioural practices, available resources, social support, and the ability to manage unexpected expenditure.

The relationship between financial resilience and saving is particularly relevant in later life. Financial resilience may be strengthened when individuals possess sufficient financial buffers to manage unexpected expenditure without substantially compromising their standard of living. Recent research has also highlighted the relationship between financial resilience and retirement saving behaviour, suggesting that the capacity or willingness to save is relevant to financial security over the life course (Suh, 2022). In the Malaysian context, the financial resilience of the ageing population is increasingly important as individuals transition from employment-based income towards retirement resources. Opportunities to compensate for financial shortfalls through additional employment may become more limited during later life. Consequently, the ability to manage existing resources, maintain appropriate saving practices, obtain social support, and manage healthcare expenditure may be important for maintaining financial stability. The present study therefore adopts a resilience-oriented perspective to examine the factors associated with the capacity of Malaysian older adults to withstand financial pressures.

2.3 Financial Literacy and Financial Resilience

Financial literacy refers broadly to the knowledge and skills required to understand financial concepts and make informed financial decisions (Lusardi, 2019; Seldal & Nyhus, 2022). It is widely recognised as an important component of effective financial management, including saving, investment, and retirement planning. Financially literate individuals may be better positioned to assess financial risks, evaluate financial products, manage expenditure, and make informed decisions concerning their financial resources (Lusardi, 2019). Financial literacy may contribute to financial resilience by supporting more effective financial planning and resource management. Individuals with greater financial knowledge may be better able to identify financial risks, plan for retirement, manage expenditure, and accumulate financial resources. From the perspective of Life Cycle Theory, financial literacy may facilitate more informed allocation of resources across different stages of the life course and support preparation for periods in which earned income becomes less available (Lusardi & Mitchell, 2011). However, financial knowledge does not necessarily translate automatically into appropriate financial behaviour. Research on household financial management has highlighted the distinction between financial knowledge and its application in actual financial practices (Hilgert et al., 2003). Similarly, research on financial health literacy suggests that financial knowledge and capabilities may have different implications across stages of the life course, including midlife and older age (Leung et al., 2022). Thus, possessing financial knowledge may provide an important cognitive foundation, but its contribution to financial resilience may depend partly on whether individuals apply such knowledge through appropriate financial practices.

This distinction may be particularly relevant among older adults, who may face financial constraints associated with fixed retirement income, healthcare expenditure, and the depletion of accumulated resources. Consequently, the direct relationship between financial literacy and financial resilience may not necessarily be uniform across individuals. Examining this relationship is therefore important for determining whether financial literacy is directly associated with financial resilience among Malaysian older adults. Based on the preceding discussion, the following hypothesis is proposed:

H1: Financial literacy has a positive effect on financial resilience among older adults in Malaysia.

2.4 Healthcare Expenditure and Financial Resilience

Healthcare expenditure represents an important potential source of financial pressure during later life. As healthcare needs increase with age, older adults may face higher expenditure on medical treatment, medication, consultations, and other health-related needs. This pressure may be particularly significant when income becomes relatively fixed after retirement. Healthcare-related expenditure can affect financial security beyond the immediate cost of treatment. Substantial medical expenses may reduce disposable income and require individuals to draw upon accumulated savings or other financial resources. When financial buffers are insufficient, medical expenditure may increase financial vulnerability and reduce the resources available to respond to subsequent financial pressures. He and Zhou (2022), for example, examine household financial vulnerability in relation to income and medical expenditure shocks, highlighting the relevance of healthcare-related financial pressures to household financial security. The relationship can also be understood through the Health Economics perspective. Healthcare expenditure may represent a greater financial burden when individuals have limited income flexibility or insufficient financial protection. For older adults who rely primarily on retirement income and accumulated resources, increases in healthcare expenditure may consequently constrain their capacity to maintain financial stability.

Evidence on financial fragility also suggests that households with limited financial buffers may be particularly vulnerable when faced with unexpected expenditure (Ampudia et al., 2016). Although financial fragility is broader than healthcare expenditure specifically, this literature provides further support for considering the availability of financial resources when examining the financial consequences of healthcare-related expenditure. In Malaysia, the relationship between healthcare expenditure and financial resilience warrants particular attention in view of population ageing and the associated increase in healthcare needs. However, the magnitude of the relationship may vary according to the financial resources available to individuals. In particular, saving behaviour may provide a financial buffer that influences the extent to which healthcare expenditure is associated with financial resilience. Accordingly, the following hypothesis is proposed:

H2: Healthcare expenditure has a negative effect on financial resilience among older adults in Malaysia.

2.5 Saving Behaviour and Financial Resilience

Saving behaviour refers to the practices through which individuals allocate part of their available financial resources towards future needs, emergencies, retirement, or other financial objectives. Saving behaviour is particularly relevant to financial resilience because accumulated financial resources can provide a buffer against unexpected expenditure and temporary income disruptions. Life Cycle Theory provides a theoretical basis for understanding the role of saving across different stages of life. Individuals are expected to allocate resources over their lifetime in response to expected income and consumption needs, including the accumulation of resources during working years for use during retirement (Modigliani & Parkin, 1975; Lusardi & Mitchell, 2011). From this perspective, saving behaviour represents an important mechanism through which financial resources can be accumulated and subsequently utilised during later life. Previous research has linked financial capability and saving-related practices with improved financial outcomes. Xiao and O'Neill (2016) emphasise the importance of financial capability in consumer financial behaviour, while Suh (2022) specifically examines the relationship between financial resilience and discretionary retirement saving. These findings suggest that saving capacity and behaviour are relevant dimensions of financial security over the life course. The importance of saving behaviour may be particularly pronounced during later life because opportunities to compensate for financial shortfalls through employment may become more limited. Adequate financial buffers can provide individuals with greater capacity to meet unexpected expenditure without immediately relying on external assistance or substantially reducing essential consumption. Saving behaviour may therefore represent an important behavioural component of financial resilience. Accordingly, the present study proposes that stronger saving behaviour is positively associated with financial resilience among Malaysian older adults.

H3: Saving behaviour has a positive effect on financial resilience among older adults in Malaysia.

2.6 Social Support and Financial Resilience

Social support refers to emotional, informational, and instrumental resources obtained through interpersonal and community relationships (Mohd et al., 2019; Cohen & Wills, 1985; Thoits, 2011). For older adults, these resources may originate from family members, friends, community organisations, and other social networks. Support may include direct financial assistance, help with healthcare and daily living expenses, information relevant to financial decision-making, and emotional reassurance during periods of difficulty. Social Support Theory proposes that social relationships can assist individuals in coping with stressful circumstances and may reduce the adverse

consequences associated with such circumstances (Cohen & Wills, 1985). Social support may operate through several channels. Direct financial assistance can provide immediate resources, while practical assistance may reduce living or healthcare-related expenditure. Informational support may also facilitate access to relevant financial or social resources, whereas emotional support may strengthen an individual's ability to cope with financial stress (Thoits, 2011). Empirical evidence further supports the importance of social relationships for the well-being and resilience of older adults. Mohd et al. (2019) highlight the role of social support among community-dwelling older adults in Asia, while Tadai et al. (2023) demonstrate the relevance of social support and resilience to the well-being of older adults in Singapore. More directly relevant to the Malaysian context, van der Meulen Rodgers et al. (2025) examine the role of family support in the well-being of older people in Malaysia and Viet Nam.

These findings suggest that family and social networks may represent an important source of support during later life. Nevertheless, social support should not be interpreted solely as direct financial transfers. Emotional, informational, and practical assistance may also contribute to an individual's capacity to manage financial and other forms of stress. Despite the recognised importance of social support for older adults' well-being, empirical evidence specifically examining its relationship with financial resilience among Malaysian older adults remains limited. The present study therefore examines whether social support is positively associated with financial resilience. Based on this rationale, the following hypothesis is proposed:

H4: Social support has a positive effect on financial resilience among older adults in Malaysia.

2.7 Moderating Role of Saving Behaviour

The preceding sections establish financial literacy, healthcare expenditure, saving behaviour, and social support as potential determinants of financial resilience. However, the relationships between these factors and financial resilience may vary across individuals. In particular, saving behaviour may influence the extent to which financial knowledge, healthcare-related financial pressures, and social resources are associated with financial resilience. Accordingly, this study conceptualises saving behaviour as both a direct predictor and a moderating variable. Contingency Theory provides the principal theoretical basis for this proposition. The theory suggests that outcomes may depend on the interaction between contextual conditions and behavioural responses rather than on individual factors operating independently (Luthans & Stewart, 1977; Donaldson, 2001). Applied to the present study, the financial resilience of older adults may therefore depend partly on how saving behaviour interacts with financial literacy, healthcare expenditure, and social support. The moderating role proposed in this study differs conceptually from mediation. Saving behaviour is not proposed to explain the mechanism through which the independent variables produce financial resilience. Rather, it is expected to condition the strength of the relationships between the independent variables and financial resilience. This distinction is important because individuals with similar levels of financial literacy, healthcare expenditure, or social support may nevertheless exhibit different levels of financial resilience depending on their saving practices.

2.7.1 Financial Literacy, Saving Behaviour and Financial Resilience

Financial literacy provides individuals with knowledge and skills that may support effective financial decision-making. However, knowledge alone may not necessarily result in consistent saving or accumulation of financial resources. Evidence concerning the relationship between financial knowledge and financial behaviour highlights the importance of considering how financial knowledge is translated into actual financial practices (Hilgert et al., 2003). Saving behaviour may therefore condition the relationship between financial literacy and financial resilience. Individuals who possess financial knowledge and simultaneously engage in regular saving may be better positioned to convert that knowledge into financial buffers. By contrast, individuals with comparable financial knowledge but weaker saving practices may accumulate fewer resources to address unexpected expenditure. This proposition is also consistent with the broader distinction between financial capability and financial behaviour identified in the financial literacy literature (Lusardi, 2019; Seldal & Nyhus, 2022). Accordingly, saving behaviour may strengthen the positive association between financial literacy and financial resilience by influencing the extent to which financial knowledge is reflected in actual financial practices. Therefore, the following hypothesis is proposed:

H5: Saving behaviour moderates the relationship between financial literacy and financial resilience among older adults in Malaysia.

2.7.2 Healthcare Expenditure, Saving Behaviour and Financial Resilience

Healthcare expenditure may reduce financial resilience by placing pressure on disposable income and accumulated financial resources. However, the financial consequences of healthcare-related expenditure may vary according to the financial buffers available to individuals. Saving behaviour may represent one such buffer. Individuals who have accumulated financial resources through regular saving may have greater capacity to meet

healthcare-related expenditure without substantially compromising resources allocated to essential consumption or other financial obligations. Conversely, individuals with limited saving may have fewer resources available to absorb higher healthcare expenditure. From a contingency perspective, the relationship between healthcare expenditure and financial resilience may therefore vary according to saving behaviour. Stronger saving behaviour may reduce the strength of the negative association between healthcare expenditure and financial resilience, although it would not necessarily eliminate the financial burden associated with healthcare expenditure. Accordingly, the following hypothesis is proposed:

H6: Saving behaviour moderates the relationship between healthcare expenditure and financial resilience among older adults in Malaysia.

2.7.3 Social Support, Saving Behaviour and Financial Resilience

Social support may provide older adults with financial, informational, emotional, and practical resources that assist them in managing financial pressures. However, the relationship between social support and financial resilience may also vary according to individuals' own financial practices. Saving behaviour may complement external support by providing an additional source of financial capacity. For example, an individual receiving family assistance may nevertheless benefit from maintaining personal financial reserves, thereby reducing dependence on external support when unexpected expenditure occurs. Conversely, individuals with limited saving behaviour may rely more heavily on family or community support when facing financial pressures. Accordingly, saving behaviour may condition the relationship between social support and financial resilience. Stronger saving behaviour may strengthen the positive association between social support and financial resilience by complementing external resources with internally accumulated financial buffers. Thus, the following hypothesis is proposed:

H7: Saving behaviour moderates the relationship between social support and financial resilience among older adults in Malaysia.

Taken together, H5–H7 extend the analysis beyond direct relationships by examining whether the association between key socio-economic factors and financial resilience varies according to saving behaviour. This approach recognises that financial resilience may reflect not only the presence of financial knowledge, healthcare pressures, and social resources but also the financial practices through which individuals manage these conditions.

2.8 Islamic Finance Mechanisms as a Policy Framework

The empirical component of this study examines the relationships between financial literacy, healthcare expenditure, social support, saving behaviour, and financial resilience. Islamic finance mechanisms are not included as empirical constructs in the structural model. Instead, they provide a contextual and policy-oriented lens through which the empirical findings can be interpreted and translated into potentially relevant Shariah-compliant mechanisms for strengthening financial resilience among vulnerable groups. Malaysia's established dual financial system provides an institutional context in which conventional and Islamic financial mechanisms operate alongside one another. Islamic finance is informed by principles including risk-sharing, social justice ('*adl*'), preservation of wealth (*hifz al-mal*), and mutual cooperation. These principles provide a potentially relevant basis for considering financial and social mechanisms aimed at strengthening financial security among vulnerable populations. The findings concerning healthcare expenditure may, for example, have implications for the accessibility and design of Takaful-based protection mechanisms. Takaful is based on mutual cooperation and the principle of *tabarru'*, under which participants make contributions towards a common fund for mutual protection. Takaful and micro-Takaful arrangements may therefore represent potential mechanisms for improving financial protection against healthcare-related expenditure, subject to appropriate product design, affordability, eligibility, and regulatory safeguards. Evidence concerning Takaful participation in Malaysia provides a relevant context for considering the role of Shariah-compliant protection mechanisms (Hassan et al., 2018). The importance of saving behaviour also has implications for Shariah-compliant financial planning and wealth management. Islamic financial institutions offer various structures based on Shariah contracts, although the specific suitability of such products for older adults depends on factors such as liquidity requirements, risk tolerance, affordability, and product characteristics. Consequently, the empirical importance of saving behaviour may support greater attention to accessible and appropriate Shariah-compliant saving and retirement solutions.

The findings concerning social support may also have implications for Islamic social finance mechanisms, particularly Waqf and Zakat. Waqf has been discussed as a mechanism for supporting social and economic development, while Zakat may provide targeted assistance to eligible individuals experiencing financial hardship. Recent research has also examined the development of Waqf-based financial and technological mechanisms, including Waqf crowdfunding (Megat et al., 2024), while Muhammad and Al-Shaghdari (2024; 2025) highlight

broader applications of Islamic social finance in addressing socio-economic challenges. In the context of older adults, such mechanisms could potentially complement family support and individual financial resources. For example, appropriately structured Waqf initiatives could support social services, healthcare-related facilities, or accommodation for eligible beneficiaries, while Zakat could provide targeted assistance to those who meet the relevant eligibility criteria. These applications should, however, be regarded as potential policy directions rather than established outcomes of the present study.

Importantly, the Islamic finance mechanisms discussed in this section are not statistically evaluated in the present study. The study does not test whether Takaful, Waqf, Zakat, or specific Islamic financial contracts directly improve financial resilience. Rather, these mechanisms are presented as potential institutional and policy responses informed by the empirical findings. Their effectiveness, accessibility, affordability, and adoption among older adults should be examined empirically in future research.

2.9 Research Conceptual Framework

The conceptual framework presented in Figure 1 illustrates the proposed determinants of financial resilience among older adults in Malaysia. The empirical model is theoretically grounded in Life Cycle Theory, Social Support Theory, the Health Economics perspective, and Contingency Theory. Financial literacy, healthcare expenditure, and social support are specified as direct predictors of financial resilience, while saving behaviour is positioned both as a direct predictor and as a moderating variable. The framework proposes that financial literacy and social support are positively associated with financial resilience, whereas healthcare expenditure is expected to be negatively associated with financial resilience. Saving behaviour is expected to have a positive direct relationship with financial resilience and to moderate the relationships between financial literacy, healthcare expenditure, social support, and financial resilience. The proposed relationships are empirically examined using Partial Least Squares Structural Equation Modelling (PLS-SEM). Islamic finance mechanisms remain outside the empirical model and serve as a contextual and policy-oriented lens for interpreting the findings and developing recommendations relevant to the Malaysian institutional environment. The synthesised relationships and corresponding hypotheses are presented in Table 1.

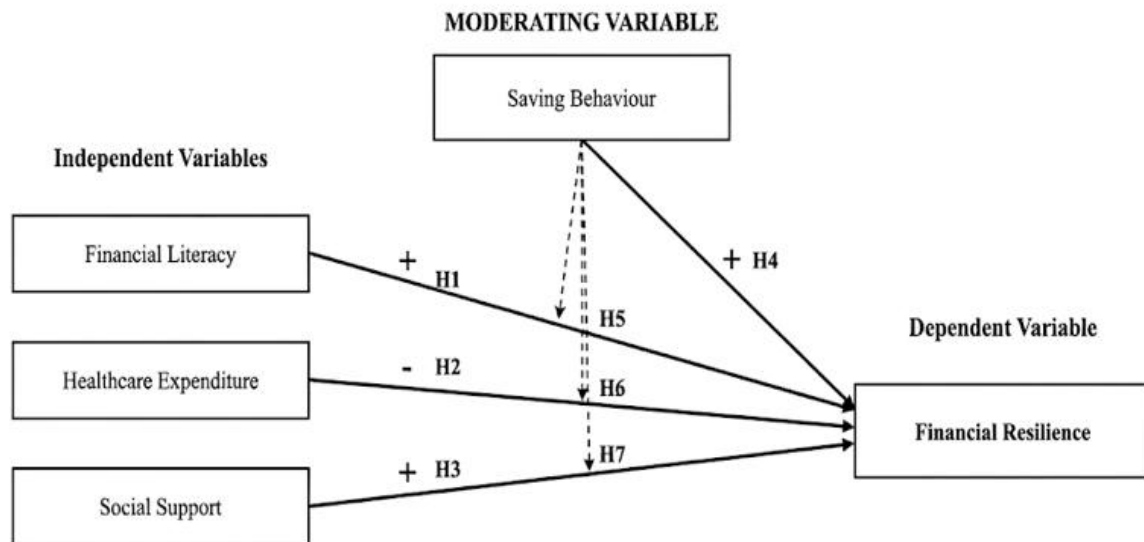


Figure 1: Research Framework, (Source: Author's draft)

Table 1. Research Hypotheses Code and Description updated

Code	Description	Path
H1	Financial literacy is positively associated with financial resilience among older adults in Malaysia.	FL → FR
H2	Healthcare expenditure is negatively associated with financial resilience among older adults in Malaysia.	HE → FR
H3	Saving behaviour is positively associated with financial resilience among older adults in Malaysia.	SB → FR
H4	Social support is positively associated with financial resilience among older adults in Malaysia.	SS → FR
H5	Saving behaviour moderates the relationship between financial literacy and financial resilience among older adults in Malaysia.	FL × SB → FR

Code	Description	Path
H6	Saving behaviour moderates the relationship between healthcare expenditure and financial resilience among older adults in Malaysia.	$HE \times SB \rightarrow FR$
H7	Saving behaviour moderates the relationship between social support and financial resilience among older adults in Malaysia.	$SS \times SB \rightarrow FR$

3. Research Methodology

This study adopts a deductive, quantitative, and cross-sectional research design to empirically examine the determinants of financial resilience among older adults in Malaysia. Specifically, it investigates the direct relationships of healthcare expenditure, financial literacy, social support, and saving behaviour with financial resilience, alongside the moderating role of saving behaviour. As established in the literature review, the empirical model is anchored in Life Cycle Theory, Social Support Theory, the Health Economics perspective, and Contingency Theory. Islamic finance mechanisms are not included as empirical constructs; rather, they serve as a policy-oriented framework for interpreting the empirical findings and developing targeted policy implications. Primary data were collected via a self-administered questionnaire using convenience sampling. The target population comprised Malaysian citizens aged 60 years and above who voluntarily participated in the study. While convenience sampling facilitates access to geographically dispersed populations, its non-probability nature introduces potential self-selection bias and limits the generalisability of the findings. Ultimately, 321 valid responses were retained for empirical analysis. This sample size exceeds commonly applied minimum requirements for Partial Least Squares Structural Equation Modelling (PLS-SEM), providing an adequate basis for estimating the proposed structural relationships.

Data analysis proceeded in two stages. Initially, IBM SPSS Statistics Version 22 was utilised for data preparation, including data screening, coding, missing-value assessment, and descriptive analysis. Subsequently, PLS-SEM was conducted using SmartPLS 4 (Hair & Alamer, 2022; Sarstedt et al., 2022). The PLS-SEM procedure followed a systematic two-stage approach, comprising measurement model assessment followed by structural model assessment. The measurement model was assessed to establish the reliability and validity of the reflective constructs. Indicator reliability was evaluated using outer loadings, while internal consistency reliability was assessed using Cronbach's alpha and composite reliability (CR), with values of 0.70 or higher considered acceptable. Convergent validity was assessed using the Average Variance Extracted (AVE), applying a minimum threshold of 0.50, indicating that the construct explains at least half of the variance in its indicators (Hair et al., 2014). Discriminant validity was assessed using both the Fornell–Larcker criterion (Fornell & Larcker, 1981) and the Heterotrait–Monotrait (HTMT) ratio (Henseler et al., 2015).

Following assessment of the measurement model, the structural model was evaluated to test the formulated hypotheses. This phase examined the four direct relationships (H1–H4) and three moderating relationships (H5–H7). Hypothesis testing employed a non-parametric bootstrapping procedure with 5,000 subsamples to generate bootstrap-based standard errors, t-statistics, confidence intervals, and p-values. The significance and direction of the path coefficients were then examined to determine whether the proposed hypotheses were supported. Finally, the explanatory power of the structural model was assessed using the coefficient of determination (R^2) for financial resilience, which indicates the proportion of variance in financial resilience explained by the model's predictors. In addition, the significance and direction of the interaction terms were examined to determine whether saving behaviour significantly moderates the relationships between financial literacy, healthcare expenditure, social support, and financial resilience.

4. Data Analysis and Results

4.1 Respondents Demographic Analysis

The demographic characteristics of the respondents, including gender, age, marital status, educational attainment, occupational status, income level, source of income, and housing status, are presented in Table 2. The analysis provides an overview of the characteristics of the 321 Malaysian older adults included in the study.

Table 2: Demographic analysis of the respondents

Variables	Coding	Frequency	Percentage
Gender	Male	77	24.0
	Female	244	76.0
Age	60 – 65	211	65.7
	66 – 70	70	21.8
	Above 70	40	12.5

Marital Status	Single	12	3.7
	Married	231	72.0
	Widow	78	24.3
Level of Education	Primary education	29	9.0
	Secondary School	59	18.4
	Pre-University	59	18.4
	Bachelor Degree	85	26.5
	Master Degree	57	17.8
	Phd degree	32	10.0
Occupational Status	Retired	254	79.1
	Still working	17	5.3
	Unemployed	18	5.6
	Unable to work	21	6.5
	Owns a Business	11	3.4
Income level	No income	38	11.8
	Less than RM2000	61	19.0
	RM2,001 to RM4,850	109	34.0
	RM4851 to RM10,959	97	30.2
	More than RM10,959	16	5.0
Source of income	Pension	223	69.5
	Personal saving	17	5.3
	Personal investments	3	0.9
	Assistance from family	41	12.8
	Governments assistance	12	3.7
	Income from employment	25	7.8
House Status	Own house	269	83.8
	Rented house	22	6.9
	Living with family	24	7.5
	Living in a care home	6	1.9

N=321

The sample was predominantly female, with women accounting for 76.0% of respondents compared with 24.0% men. In terms of age, 65.7% of respondents were aged 60–65 years, followed by 21.8% aged 66–70 years and 12.5% aged above 70 years. Most respondents were married (72.0%), while 24.3% were widowed and 3.7% were single. Regarding educational attainment, the largest group held a bachelor's degree (26.5%), followed by respondents with secondary-school and pre-university qualifications (18.4% each). A further 17.8% held a master's degree and 10.0% held a PhD, while 9.0% reported primary education as their highest level of formal education. With respect to occupational status, the majority of respondents were retired (79.1%). The remaining respondents were unable to work (6.5%), unemployed (5.6%), employed (5.3%), or business owners (3.4%). In terms of income, 34.0% reported monthly income between RM2,001 and RM4,850, while 30.2% reported income between RM4,851 and RM10,959. A further 19.0% earned less than RM2,000, 11.8% reported no monthly income, and 5.0% earned more than RM10,959. Pension was the predominant source of income, reported by 69.5% of respondents, followed by assistance from family members (12.8%), employment income (7.8%), personal savings (5.3%), government assistance (3.7%), and personal investments (0.9%). Regarding housing status, 83.8% of respondents owned their homes, while 7.5% lived with family members, 6.9% rented their homes, and 1.9% resided in care homes.

4.2 Assessment of the Measurement Model: Reliability and Convergent Validity

The reflective measurement model was assessed for internal consistency reliability and convergent validity using SmartPLS 4. The results are presented in Table 3. Internal consistency reliability was assessed using Cronbach's alpha and composite reliability (CR), while convergent validity was assessed using the Average Variance Extracted (AVE). As shown in Table 3, Cronbach's alpha values ranged from 0.752 to 0.912, while composite reliability values ranged from 0.796 to 0.930. All values exceeded the recommended threshold of 0.70, indicating satisfactory internal consistency reliability. Financial Literacy recorded the highest composite reliability (CR = 0.930), followed by Saving Behaviour (CR = 0.922). Healthcare Expenditure recorded the lowest composite reliability (CR = 0.796), which nevertheless exceeded the recommended threshold. Convergent validity was supported as all constructs recorded AVE values above the recommended minimum of 0.50. Financial Resilience recorded the highest AVE (0.726), followed by Saving Behaviour (0.696), Social Support (0.642), Financial Literacy (0.640),

and Healthcare Expenditure (0.571). These results indicate that the constructs explain more than half of the variance in their respective indicators and satisfy the recommended criteria for convergent validity.

Table 3: Analysis of Internal consistency and reliability

Variables	Cronbach's Alpha	Composite Reliability (a)	Average Variance Extracted (AVE)
Financial Literacy	0.907	0.930	0.640
Healthcare Expenditure	0.752	0.796	0.571
Saving Behaviour	0.912	0.922	0.696
Social Support	0.866	0.882	0.642
Financial Resilience	0.905	0.910	0. 0.726

4.3 Analysis of Discriminant Validity

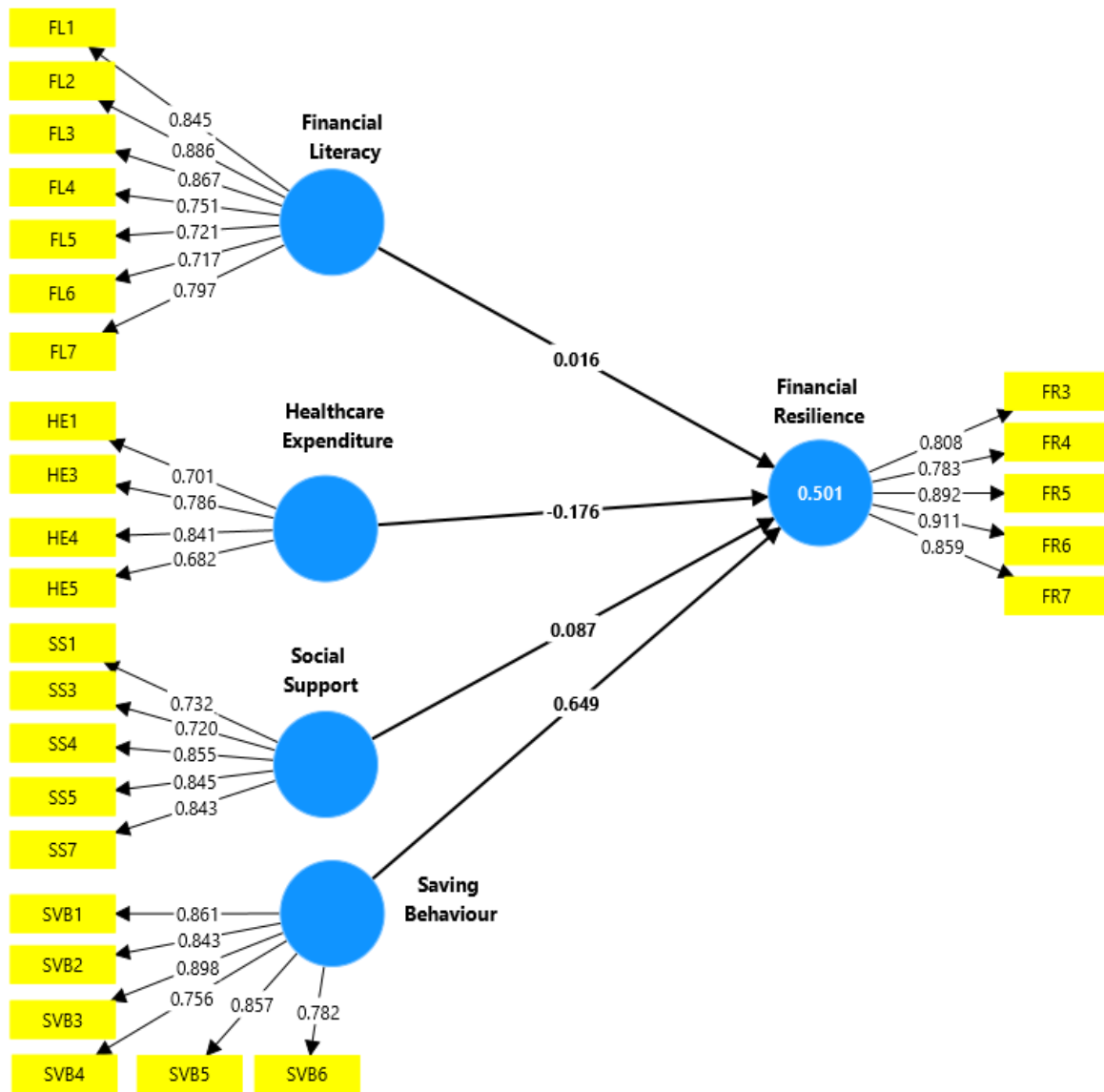
Discriminant validity was assessed using the Fornell–Larcker criterion. According to [Fornell and Larcker \(1981\)](#), discriminant validity is established when the square root of the AVE for each construct is greater than its correlations with the other constructs. As shown in Table 4, the square roots of the AVE values, presented on the diagonal, exceed the corresponding inter-construct correlations. For example, the square root of the AVE for Saving Behaviour is 0.834, which is greater than its correlation with Financial Resilience (0.680). Similarly, the square root of the AVE for Financial Resilience is 0.852 and exceeds its correlations with all other constructs. The same pattern is observed across all five constructs. These results provide evidence that the constructs demonstrate satisfactory discriminant validity.

Table 4: Discriminant Validity Analysis

Variables	FL	FR	HE	SVB	SS
Financial Literacy	0.800				
Financial Resilience	0.401	0.852			
Healthcare Expenditure	0.141	-0.149	0.755		
Saving Behaviour	0.600	0.680	0.041	0.834	
Social Support	0.229	0.306	-0.029	0.324	0.801

4.4 Assessment of the Structural Model

Following assessment of the measurement model, the structural model was evaluated to determine its explanatory power and to test the proposed relationships. The coefficient of determination (R^2) was used to assess the proportion of variance in the endogenous construct explained by the exogenous constructs (Hair & Alamer, 2022). As presented in Figure 2, the structural model produced an R^2 value of 0.511 for Financial Resilience. Based on commonly used guidelines for behavioural and social science research, this represents a moderate level of explanatory power. The result indicates that financial literacy, healthcare expenditure, saving behaviour, and social support collectively explain 51.1% of the variance in financial resilience among the sampled Malaysian older adults. The remaining 48.2% of the variance is attributable to factors not included in the present model. Overall, the R^2 result indicates that the proposed model has meaningful explanatory power for financial resilience within the study sample.

Figure 2 Items Loading, Path Coefficient, and R² Values

4.5 Structural Model Assessment and Hypothesis Testing

Figure 3 and Tables 5 and 6 present the results of the structural model assessment and hypothesis testing based on the bootstrapping procedure performed using SmartPLS 4. The analysis examined the four hypothesised direct relationships and three moderating relationships proposed in the conceptual framework.

The results indicate that Healthcare Expenditure is negatively associated with Financial Resilience, with a statistically significant path coefficient ($\beta = -0.144$, $t = 2.746$, $p = .006$). This finding supports H2, which proposed a negative relationship between healthcare expenditure and financial resilience. Saving Behaviour demonstrates a strong and statistically significant positive relationship with Financial Resilience ($\beta = 0.654$, $t = 11.615$, $p < .001$), thereby supporting H3. In contrast, Financial Literacy does not demonstrate a statistically significant direct relationship with Financial Resilience ($\beta = 0.062$, $t = 1.026$, $p = .305$), resulting in the rejection of H1. Similarly, Social Support does not demonstrate a statistically significant direct relationship with Financial Resilience ($\beta = 0.080$, $t = 1.718$, $p = .086$), and therefore H4 is rejected.

The moderation analysis examined whether Saving Behaviour significantly changes the strength of the relationships between the three antecedent variables and Financial Resilience. The interaction between Financial Literacy and Saving Behaviour is statistically significant (H5: $p = .020$), indicating that Saving Behaviour significantly moderates the relationship between Financial Literacy and Financial Resilience. Thus, H5 is supported. In contrast, the interaction between Healthcare Expenditure and Saving Behaviour is not statistically significant (H6: $p = .367$), indicating that Saving Behaviour does not significantly moderate the relationship between Healthcare Expenditure and Financial Resilience. Therefore, H6 is rejected. Similarly, the interaction between Social Support and Saving Behaviour is not statistically significant (H7: $p = .175$), resulting in the rejection of H7.

Overall, the structural model provides support for H2, H3, and H5, while H1, H4, H6, and H7 are not supported. These findings indicate that Saving Behaviour has a significant direct relationship with Financial Resilience and significantly moderates the relationship between Financial Literacy and Financial Resilience, whereas the proposed moderating relationships involving Healthcare Expenditure and Social Support are not statistically significant.

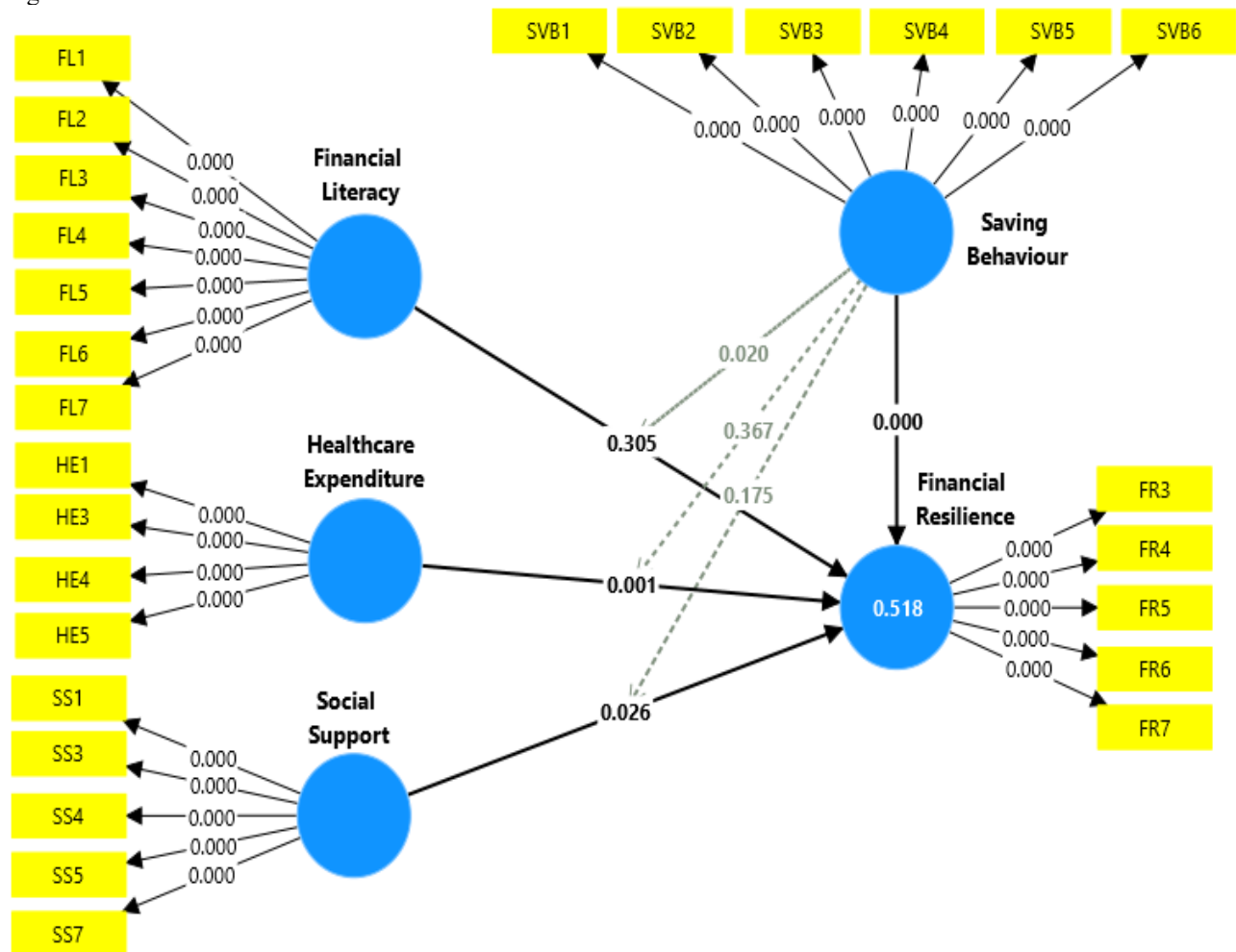


Figure 3. PLS Bootstrapping (p-values, t-value) for the research Model

Table 5: Direct effects Hypotheses Testing

Hypothesis	T -Value	P- values	Decision	
Financial Literacy -> Financial Resilience	1.026	0.305	H1	Rejected
Healthcare Expenditure -> Financial Resilience	3.279	0.001	H2	Accepted
Saving Behaviour -> Financial Resilience	11.487	0.000	H3	Accepted
Social Support -> Financial Resilience	2.225	0.026	H4	Accepted

Table 6: Interaction effects Hypotheses Testing

Hypothesis	T -Value	P- values	Decision	
Saving Behaviour x Social Support -> Financial Resilience	1.358	0.175	H1	Rejected
Saving Behaviour x Healthcare Expenditure -> Financial Resilience	0.902	0.367	H2	Rejected
Saving Behaviour x Financial Literacy -> Financial Resilience	2.321	0.020	H3	Accepted

5. Discussion of Results

The primary objective of this study was to examine the socio-economic and psychosocial factors associated with financial resilience among older adults in Malaysia and to assess the moderating role of saving behaviour. The structural model explains 51.8% of the variance in financial resilience ($R^2 = 0.518$), indicating a moderate level of explanatory power. The findings provide evidence that healthcare expenditure and saving behaviour are

important correlates of financial resilience, while the direct relationships of financial literacy and social support are not statistically significant. Furthermore, the moderation analysis indicates that saving behaviour significantly conditions the relationship between financial literacy and financial resilience, but does not significantly moderate the relationships involving healthcare expenditure or social support.

5.1 Direct Relationships with Financial Resilience

The first hypothesis (H1) proposed a positive relationship between financial literacy and financial resilience. The results indicate a positive but statistically non-significant relationship ($\beta = 0.062$, $t = 1.026$, $p = .305$), resulting in the rejection of H1. This finding differs from previous research that generally associates financial literacy with improved financial decision-making and financial well-being (Lusardi, 2019; Leung et al., 2022). Nevertheless, the finding is consistent with the broader argument that financial knowledge does not necessarily translate into effective financial behaviour or improved financial outcomes (Hilgert et al., 2003; O'Connor et al., 2019). Among older adults, financial literacy may therefore be insufficient on its own to strengthen financial resilience, particularly when income is relatively fixed and opportunities to increase financial resources are limited.

H2 proposed a negative relationship between healthcare expenditure and financial resilience. The results support this hypothesis, with healthcare expenditure showing a statistically significant negative relationship with financial resilience ($\beta = -0.144$, $t = 2.746$, $p = .006$). This finding is consistent with research identifying medical expenditure as an important source of household financial vulnerability (He & Zhou, 2022). Higher healthcare-related expenditure may reduce disposable financial resources and require older adults to draw upon savings or other assets, potentially reducing their capacity to absorb subsequent financial pressures. The finding therefore highlights the importance of healthcare affordability and financial protection in strengthening financial resilience among Malaysia's ageing population.

H3 proposed a positive relationship between saving behaviour and financial resilience. The hypothesis was strongly supported, with saving behaviour demonstrating a statistically significant positive relationship with financial resilience ($\beta = 0.654$, $t = 11.615$, $p < .001$). This finding is consistent with previous research highlighting the importance of saving behaviour and discretionary retirement saving for financial resilience (Suh, 2022). It also complements evidence that financial management behaviours can contribute to improved financial well-being (Magli et al., 2022). For older adults, accumulated savings may provide an important financial buffer against unexpected expenditure and fluctuations in household financial conditions. The relatively large path coefficient observed in this study further indicates that saving behaviour represents an important correlate of financial resilience within the study sample.

H4 proposed a positive relationship between social support and financial resilience. However, the relationship was positive but statistically non-significant ($\beta = 0.080$, $t = 1.718$, $p = .086$), resulting in the rejection of H4. This finding does not necessarily imply that social support is unimportant to older adults. Previous research has demonstrated the relevance of family and social support to the broader well-being and resilience of older adults (Tadai et al., 2023; van der Meulen Rodgers et al., 2025). However, the present findings suggest that such support may not translate directly into measurable financial resilience within this particular sample. One possible explanation is that social support may operate through indirect or conditional channels, including access to resources, emotional support, or assistance during specific financial difficulties, rather than producing a consistently significant direct relationship with financial resilience.

Overall, the direct-effect findings indicate that saving behaviour is the strongest positive predictor of financial resilience in the model, while healthcare expenditure is negatively associated with resilience. In contrast, financial literacy and social support do not demonstrate statistically significant direct relationships with financial resilience. These findings provide a basis for examining whether saving behaviour changes the strength of relationships between other socio-economic factors and financial resilience.

5.2 Moderating Effects

The moderation analysis provides further insight into the conditions under which the proposed relationships may vary. H5 proposed that saving behaviour moderates the relationship between financial literacy and financial resilience. The interaction term was statistically significant ($t = 2.321$, $p = .020$), supporting H5. This finding suggests that the relationship between financial literacy and financial resilience varies according to the level of saving behaviour. In other words, financial knowledge may be more closely associated with financial resilience among older adults who engage more actively in saving. This finding supports the distinction between possessing financial knowledge and applying that knowledge through financial behaviour (Hilgert et al., 2003).

H6 proposed that saving behaviour moderates the relationship between healthcare expenditure and financial resilience. The interaction effect was not statistically significant ($t = 0.902$, $p = .367$), resulting in the rejection of H6. This suggests that saving behaviour does not significantly alter the relationship between healthcare expenditure and financial resilience within the study sample. Although savings may provide an important general financial buffer, the results indicate that higher saving behaviour does not significantly change the negative association between healthcare expenditure and financial resilience. This finding highlights the possibility that

healthcare-related financial pressures may require complementary forms of financial protection beyond individual saving. Similarly, H7 proposed that saving behaviour moderates the relationship between social support and financial resilience. The interaction effect was statistically non-significant ($t = 1.358, p = .175$), resulting in the rejection of H7. The finding suggests that the relationship between social support and financial resilience does not vary significantly according to saving behaviour. Thus, although social support may provide broader forms of assistance to older adults, its relationship with financial resilience does not appear to be conditional on saving behaviour in the present sample.

Taken together, the moderation findings demonstrate that saving behaviour does not uniformly condition all relationships within the model. Its significant interaction with financial literacy indicates a specific conditional relationship, whereas the non-significant interactions involving healthcare expenditure and social support suggest that these relationships may depend on factors beyond individual saving practices.

5.3 Islamic Finance Policy Implications

The empirical findings provide a basis for considering Islamic finance mechanisms as potential policy-oriented responses to the financial challenges identified in the study. Importantly, these mechanisms were not empirically tested in the present research and should therefore be understood as proposed policy applications rather than direct empirical implications of the statistical model.

First, the significant moderating role of saving behaviour in the relationship between financial literacy and financial resilience suggests the potential value of linking financial education with practical saving opportunities. Islamic financial institutions could develop targeted Shariah-compliant savings products for older adults, supported by appropriate financial education and simple mechanisms that facilitate regular saving. Products structured using Shariah-compliant contracts, where appropriate, could provide older adults with accessible vehicles for implementing financial knowledge through actual saving practices.

Second, the negative relationship between healthcare expenditure and financial resilience, combined with the non-significant moderation effect of saving behaviour, suggests that individual savings alone may not fully address healthcare-related financial pressures. Islamic social finance mechanisms such as Waqf, Zakat, and Takaful could potentially complement individual financial preparation. For example, appropriately structured health-related Waqf initiatives could support community healthcare services, while Takaful-based arrangements could provide additional financial protection against eligible healthcare-related risks. Such mechanisms would require appropriate institutional design, Shariah governance, regulatory approval, and assessment of financial sustainability before implementation.

Third, although the direct relationship between social support and financial resilience was not statistically significant in the present study, previous evidence indicates that family and community support remain relevant to older adults' broader well-being. Islamic social finance mechanisms such as Infaq and Waqf could therefore complement existing informal support networks by providing structured channels through which community resources can be directed towards financially vulnerable older adults. Digital platforms may further improve transparency and accessibility, subject to appropriate governance and data-protection arrangements.

Overall, the findings suggest that Islamic finance should not be viewed as a substitute for individual financial behaviour or public social protection. Rather, Shariah-compliant financial and social-finance mechanisms may complement household saving, healthcare protection, and community support as part of a broader policy response to the financial challenges associated with population ageing.

6. Contributions, Implications, and Future Research

This study contributes to the literature on financial resilience among older adults by examining saving behaviour not only as a direct correlate of financial resilience but also as a moderating variable. The findings extend existing research by demonstrating that the relationship between financial literacy and financial resilience varies according to saving behaviour. At the same time, the non-significant direct relationship between financial literacy and financial resilience indicates that financial knowledge alone may not be sufficient to strengthen financial resilience among older adults. This finding reinforces the importance of distinguishing between financial knowledge and the behavioural application of that knowledge.

The study also contributes to the understanding of healthcare-related financial pressures in later life. The significant negative relationship between healthcare expenditure and financial resilience indicates that healthcare-related financial demands represent an important consideration in strengthening financial security among older adults. However, the non-significant moderation effect of saving behaviour suggests that individual saving practices do not significantly alter this relationship within the present sample. This finding highlights the potential importance of complementary financial protection and social-policy measures alongside individual financial preparation. A further contribution concerns the role of social support. Although social support was positively related to financial resilience, the relationship did not reach statistical significance. This finding provides a useful qualification to previous research emphasising the importance of family and social support for older adults' well-

being. It suggests that the financial implications of social support may operate through specific circumstances or indirect pathways that require further investigation.

From a practical perspective, the findings suggest that policymakers, financial institutions, and organisations supporting older adults should consider approaches that connect financial education with practical saving opportunities. Islamic financial institutions could complement conventional financial education with accessible Shariah-compliant savings products and financial planning services targeted at older adults. In addition, the negative association between healthcare expenditure and financial resilience indicates the potential value of complementary risk-sharing and social-finance mechanisms, including *Takaful*, *Waqf*, and *Zakat*, subject to appropriate institutional and regulatory arrangements. The study also provides implications for Islamic social finance policy. Rather than treating Islamic finance mechanisms as empirically established solutions, the findings provide a basis for exploring how *Waqf*, *Zakat*, *Takaful*, and *Infaq* could complement existing public and household-level support systems. Future policy development should therefore assess the feasibility, governance, affordability, accessibility, and Shariah compliance of such mechanisms before implementation.

Several avenues for future research emerge from the findings. First, future studies could empirically examine the adoption, accessibility, and willingness to participate in Islamic social-finance mechanisms designed to support older adults, including health-related *Waqf* and *Takaful* arrangements. Second, longitudinal research could investigate how saving behaviour develops across the life course and whether sustained saving practices have longer-term implications for financial resilience during retirement. Third, qualitative research involving older adults could provide deeper insight into how financial knowledge is translated into saving practices and how healthcare expenditure and social support influence financial decision-making. Finally, future research could employ probability sampling and larger, more geographically diverse samples to improve the generalisability of the findings.

7. Conclusion

This study examined the socio-economic factors associated with financial resilience among older adults in Malaysia, with particular emphasis on the moderating role of saving behaviour. The findings demonstrate that saving behaviour has a strong positive relationship with financial resilience, while healthcare expenditure is negatively associated with resilience. In contrast, financial literacy and social support do not demonstrate statistically significant direct relationships with financial resilience within the study sample. The moderation analysis provides an additional contribution by demonstrating that saving behaviour significantly moderates the relationship between financial literacy and financial resilience. This finding suggests that the relationship between financial knowledge and financial resilience varies according to saving behaviour. However, saving behaviour does not significantly moderate the relationships between healthcare expenditure and financial resilience or between social support and financial resilience. These results indicate that the role of saving behaviour is conditional rather than uniform across the determinants examined. The findings also have implications for financial and social policy in the context of Malaysia's ageing population. Strengthening financial resilience may require a combination of individual financial capabilities, disciplined saving practices, healthcare-related financial protection, and appropriate social support. Within this broader policy context, Islamic finance and Islamic social finance mechanisms such as *Takaful*, *Waqf*, *Zakat*, and *Infaq* may offer potential complementary instruments for supporting older adults. However, these mechanisms were not empirically tested in this study and therefore represent policy-oriented propositions requiring further empirical assessment.

Overall, the study highlights the importance of viewing financial resilience among older adults as a multidimensional outcome shaped by both individual financial behaviour and broader financial and social conditions. The findings provide a foundation for future research to examine how saving practices, healthcare protection, social support, and Islamic social finance mechanisms can be integrated to strengthen financial resilience among Malaysia's ageing population.

5. Discussion of Results

The primary objective of this study was to examine the socio-economic and psychosocial determinants of financial resilience among older adults in Malaysia, while assessing the moderating role of saving behaviour. The structural model explains 51.8% of the variance in financial resilience ($R^2 = 0.518$), indicating moderate explanatory power. The findings show that healthcare expenditure and saving behaviour are significantly associated with financial resilience, whereas the direct relationships involving financial literacy and social support are non-significant. Furthermore, the moderation analysis indicates that saving behaviour significantly conditions the relationship between financial literacy and financial resilience, but does not significantly moderate the relationships between healthcare expenditure or social support and financial resilience.

5.1 Direct Relationships with Financial Resilience

The first hypothesis (H1) proposed a positive relationship between financial literacy and financial resilience. The results indicate a positive but non-significant relationship ($\beta = 0.062$, $t = 1.026$, $p = 0.305$), leading to the rejection

of H1. Although this finding differs from some previous studies associating financial literacy with improved financial well-being (Lusardi, 2019; Leung et al., 2022), it is consistent with the broader argument that financial knowledge does not necessarily translate into effective financial behaviour (Hilgert et al., 2003; O'Connor et al., 2019). For older adults, particularly those living on relatively fixed incomes and with limited opportunities to generate additional income, financial literacy alone may therefore be insufficient to strengthen financial resilience.

H2 proposed a negative relationship between healthcare expenditure and financial resilience. The results support this hypothesis ($\beta = -0.144$, $t = 2.746$, $p = 0.006$). This finding is consistent with research identifying medical expenditure shocks as an important source of household financial vulnerability (He & Zhou, 2022). Higher healthcare expenditure may reduce disposable income and weaken an individual's capacity to absorb subsequent financial shocks. The finding therefore highlights the importance of affordable healthcare and appropriate financial protection mechanisms for Malaysia's ageing population.

H3 proposed a positive relationship between saving behaviour and financial resilience. This hypothesis was strongly supported, with saving behaviour showing a significant positive relationship with financial resilience ($\beta = 0.654$, $t = 11.615$, $p < 0.001$). Consistent with previous research (Suh, 2022; Magli et al., 2022), disciplined saving practices and accumulated financial buffers can strengthen individuals' capacity to manage unexpected expenditures and financial shocks. Among the predictors examined in this study, saving behaviour has the largest standardised path coefficient, indicating that it is the strongest predictor of financial resilience in the estimated model.

H4 proposed a positive relationship between social support and financial resilience. The results indicate a positive but non-significant relationship ($\beta = 0.080$, $t = 1.718$, $p = 0.086$), resulting in the rejection of H4. This finding does not imply that social support is unimportant. Previous research has established its relevance to psychological well-being and resilience among older adults (Tadai et al., 2023; van der Meulen Rodgers et al., 2025). However, within the present model, social support may operate through indirect or non-financial channels, such as emotional reassurance, practical assistance, or episodic support during periods of difficulty, rather than through a direct and measurable relationship with financial resilience.

5.2 Moderating Effects

The moderation analysis provides further insight into the conditions under which the examined relationships may vary. H5 proposed that saving behaviour moderates the relationship between financial literacy and financial resilience. The interaction term is significant ($t = 2.321$, $p = 0.020$), supporting H5. This finding indicates that the relationship between financial literacy and financial resilience varies according to the level of saving behaviour. In particular, higher levels of saving behaviour appear to strengthen the positive relationship between financial literacy and financial resilience. This finding reinforces the distinction between possessing financial knowledge and translating that knowledge into financial behaviour (Hilgert et al., 2003).

H6 proposed that saving behaviour moderates the relationship between healthcare expenditure and financial resilience. The interaction term is not significant ($t = 0.902$, $p = 0.367$), leading to the rejection of H6. Although saving provides a general financial buffer, the findings suggest that saving behaviour does not significantly alter the negative relationship between healthcare expenditure and financial resilience within the study sample. This may indicate that healthcare-related financial pressures are influenced by factors extending beyond individual saving practices and may therefore require broader financial protection and social-policy responses.

Similarly, H7 proposed that saving behaviour moderates the relationship between social support and financial resilience. The interaction term is not significant ($t = 1.358$, $p = 0.175$), resulting in the rejection of H7. Thus, the relationship between social support and financial resilience does not appear to vary significantly according to saving behaviour. This suggests that the role of social support may operate through pathways that are relatively independent of individuals' saving practices.

5.3 Islamic Finance Policy Implications

While Islamic finance mechanisms were not empirically tested as variables in the present model, the findings provide a basis for discussing potential Shariah-compliant policy responses to the financial challenges identified among older adults.

First, the significant moderating role of saving behaviour highlights the importance of connecting financial education with accessible and practical saving opportunities. Islamic financial institutions could consider developing targeted Shariah-compliant savings products, using appropriate contractual structures, that are accessible to older adults. Such products may help facilitate the application of financial knowledge through actual saving behaviour. Second, the absence of a significant moderating effect of saving behaviour on the relationship between healthcare expenditure and financial resilience suggests that individual savings alone may not be sufficient to address healthcare-related financial pressures. Islamic social finance mechanisms, including Waqf, Zakat, and Takaful, may provide complementary forms of social and risk-sharing support. For example, health-oriented Waqf initiatives could contribute to subsidised community healthcare services, while appropriately

designed micro-Takaful arrangements could provide additional protection against severe or unexpected healthcare costs.

Third, although the direct relationship between social support and financial resilience was not statistically significant, social support remains relevant to the broader well-being of older adults. Instruments such as Infaq and Waqf could potentially help institutionalise community-based assistance and channel resources towards vulnerable older adults in a more structured and transparent manner. These Islamic finance mechanisms should therefore be viewed as potential complementary instruments rather than substitutes for individual saving, public healthcare provision, or existing social protection programmes. Their practical implementation would require further assessment of affordability, accessibility, governance, Shariah compliance, institutional capacity, and acceptance among older adults.

6. Contributions, Implications, and Future Research

This study contributes to the literature on financial resilience among older adults by conceptualising saving behaviour not only as a direct predictor but also as a potential moderating condition. The significant interaction between financial literacy and saving behaviour indicates that the relationship between financial knowledge and financial resilience is conditional on behavioural engagement with saving. This finding reinforces the distinction between possessing financial knowledge and applying that knowledge through actual financial behaviour. The study also highlights the importance of healthcare-related financial pressures in later life. The negative relationship between healthcare expenditure and financial resilience indicates that higher healthcare expenditure is associated with lower financial resilience among the sampled older adults. Moreover, the absence of a significant moderating effect of saving behaviour suggests that individual saving practices alone may not substantially alter this relationship. This finding points to the potential importance of complementary healthcare financing and social protection mechanisms.

From a practical perspective, the findings suggest that policymakers and financial institutions should consider moving beyond financial literacy initiatives that focus primarily on knowledge acquisition towards interventions that also facilitate the application of financial knowledge through saving. At the same time, Islamic social finance mechanisms, including Takaful, Waqf, Zakat, and Infaq, may provide complementary institutional pathways for addressing financial and healthcare vulnerabilities among older adults. However, these mechanisms were not empirically tested in this study and should therefore be regarded as policy-oriented propositions requiring further investigation.

Future research could extend the present study in several directions. First, further empirical research could examine the accessibility, adoption, affordability, and willingness of older adults to participate in specific Shariah-compliant mechanisms, such as health-related Waqf and micro-Takaful, thereby providing empirical evidence on the feasibility of Islamic finance-based interventions for strengthening financial resilience. Second, longitudinal studies could track saving behaviour and financial resilience over time to examine how sustained saving practices across the life course are associated with post-retirement financial resilience. Such research would provide greater insight into whether financial behaviours developed earlier in life continue to influence financial resilience during later life.

Qualitative research could also provide deeper understanding of the behavioural and psychosocial barriers that may prevent financial knowledge from being translated into active saving, while also exploring how social support networks operate during periods of financial difficulty. In addition, future studies could employ probability-based sampling across geographically and socio-economically diverse populations to improve the representativeness and generalisability of the findings. Finally, incorporating additional factors such as pension adequacy, debt burden, health insurance or Takaful coverage, digital financial capability, and access to formal financial services could provide a more comprehensive understanding of the determinants of financial resilience among Malaysia's ageing population.

7. Conclusion

This study investigated the socio-economic determinants of financial resilience among older adults in Malaysia, with particular emphasis on the moderating role of saving behaviour. The findings indicate that saving behaviour is strongly and positively associated with financial resilience, whereas healthcare expenditure is negatively associated with financial resilience. In contrast, financial literacy and social support do not exhibit significant direct relationships with financial resilience in the estimated model. Importantly, the moderation analysis indicates that saving behaviour significantly strengthens the relationship between financial literacy and financial resilience. This finding suggests that financial knowledge may be more closely associated with resilience when it is accompanied by active saving behaviour, highlighting the importance of translating financial knowledge into practical financial actions. However, saving behaviour does not significantly moderate the relationships between healthcare expenditure or social support and financial resilience.

These findings have important policy implications for Malaysia's ageing population. Strengthening financial resilience may require a combination of individual-level behavioural interventions, particularly those that

facilitate saving, and broader institutional mechanisms addressing healthcare and social protection needs. Within this broader framework, Islamic social finance mechanisms such as Takaful, Waqf, Zakat, and Infaq may offer potentially relevant complementary pathways for supporting vulnerable older adults. Nevertheless, these mechanisms were not empirically tested in the present study and should therefore be considered policy-oriented propositions rather than established empirical solutions. Overall, the study demonstrates that financial resilience among older adults is a multidimensional outcome shaped by both individual financial behaviour and broader economic and social conditions. Future research should empirically evaluate the feasibility and effectiveness of complementary Islamic finance and social protection mechanisms to determine how they can contribute to strengthening financial resilience among Malaysia's ageing population.

References

- Abd Manaf, N. H., Omar, A., & Juhdi, N. (2021). Healthcare utilisation among elderly in Malaysia: The mediating role of health literacy. *The Medical Journal of Malaysia*, 76(2), 218–222.
- Al-Shaghdari, F., Hassan, R., Yusoff, S. S. M., Azman, S. M. M. S., Salman, S., & Yusof, N. A. M. (2025). Financial vulnerability among B40 seniors in Malaysia: Novel predictors and the role of Islamic social finance. *The Journal of Muamalat and Islamic Finance Research*, 22(2), 165–179. <https://doi.org/10.33102/jmifr.659>
- Ampudia, M., Van Vlokhoven, H., & Zochowski, D. (2016). Financial fragility of euro area households. *Journal of Financial Stability*, 27, 250–262.
- Bernama. (2020). Over 50 pct of EPF contributors aged 54 have below RM50,000 savings. <https://www.bernama.com/en/news.php?id=1883556>
- Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin*, 98(2), 310–357. <https://doi.org/10.1037/0033-2909.98.2.310>
- Donaldson, L. (2001). *The contingency theory of organizations*. SAGE Publications.
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39–50. <https://doi.org/10.2307/3151312>
- Hair, J. F., Jr., Sarstedt, M., Hopkins, L., & Kuppelwieser, V. G. (2014). Partial least squares structural equation modeling (PLS-SEM): An emerging tool in business research. *European Business Review*, 26(2), 106–121. <https://doi.org/10.1108/EBR-10-2013-0128>
- Hair, J., & Alamer, A. (2022). Partial least squares structural equation modeling (PLS-SEM) in second language and education research: Guidelines using an applied example. *Research Methods in Applied Linguistics*, 1(3), 100027. <https://doi.org/10.1016/j.rmal.2022.100027>
- Hassan, R., & Salman, S. A. (2018). Islamic accountability and waqf towards achieving equitable distribution of wealth within the Islamic economic framework. *International Journal of Islamic Economics and Finance Research*, 1(1), 1–11.
- Hassan, R., Kassim, H. M., & Salman, S. A. (2018). Examining the innovative minds of Takaful consumers: The case of Malaysia. *Indian Journal of Public Health Research and Development*, 9(12), 127–131.
- He, L., & Zhou, S. (2022). Household financial vulnerability to income and medical expenditure shocks: Measurement and determinants. *International Journal of Environmental Research and Public Health*, 19(8), 4480. <https://doi.org/10.3390/ijerph19084480>
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43, 115–135. <https://doi.org/10.1007/s11747-014-0403-8>
- Hilgert, M. A., Hogarth, J. M., & Beverly, S. G. (2003). Household financial management: The connection between knowledge and behavior. *Federal Reserve Bulletin*, 89(7), 309–322.
- Kamble, P. A., Mehta, A., & Rani, N. (2026). Building financial resilience: A systematic literature review and future research agenda. *Journal of Economic Surveys*, 40(2), 954–981. <https://doi.org/10.1111/joes.70024>
- Lee, M. K., & Oh, J. (2020). Health-related quality of life in older adults: Its association with health literacy, self-efficacy, social support, and health-promoting behavior. *Healthcare*, 8(4), 407. <https://doi.org/10.3390/healthcare8040407>
- Leung, A. Y., Parial, L. L. B., Szeto, S. S., & Koduah, A. O. (2022). Understanding the role of financial health literacy in midlife and old age: A scoping review. *Health & Social Care in the Community*, 30(6), e3921–e3933. <https://doi.org/10.1111/hsc.13862>
- Lusardi, A. (2019). Financial literacy and the need for financial education: Evidence and implications. *Swiss Journal of Economics and Statistics*, 155(1), 1–8. <https://doi.org/10.1186/s41937-019-0027-5>
- Lusardi, A., & Mitchell, O. S. (2011). *Financial literacy and planning: Implications for retirement wellbeing* (NBER Working Paper No. 17078). National Bureau of Economic Research. <https://doi.org/10.3386/w17078>
- Lusardi, A., Mitchell, O. S., & Curto, V. (2014). Financial literacy and financial sophistication in the older population. *Journal of Pension Economics & Finance*, 13(4), 347–366. <https://doi.org/10.1017/S1474747214000031>

- Lusardi, A., Mitchell, O. S., & Oggero, N. (2020). Debt and financial vulnerability on the verge of retirement. *Journal of Money, Credit and Banking*, 52(5), 1005–1034. <https://doi.org/10.1111/jmcb.12671>
- Luthans, F., & Stewart, T. I. (1977). A general contingency theory of management. *Academy of Management Review*, 2(2), 181–195. <https://doi.org/10.2307/257553>
- Magli, A. S., Sabri, M. F., Rahim, H. A., & Othman, M. A. (2022). Payment behaviour among B40 households during COVID-19 as a mediator towards financial well-being. *Malaysian Journal of Consumer and Family Economics*, 28, 1–32.
- Mahdzan, N. S., Zainudin, R., Abd Sukor, M. E., Zainir, F., & Wan Ahmad, W. M. (2020). An exploratory study of financial well-being among Malaysian households. *Journal of Asian Business and Economic Studies*, 27(3), 285–302.
- Megat, P. A., Al-Shaghdari, F., Bin Ngah, B., & Abdelfattah, S. S. (2024). Assessing the predictive benefits of Waqftech smart contracts on corporate waqf crowdfunding among Malaysian enterprises. *Journal of Islamic Marketing*, 15(5), 1303–1325. <https://doi.org/10.1108/JIMA-08-2023-0262>
- Modigliani, F., & Parkin, M. (1975). The life cycle hypothesis of saving twenty years later. In M. Parkin (Ed.), *Contemporary issues in economics* (pp. 2–36). Manchester University Press.
- Mohd, T. A. M. T., Yunus, R. M., Hairi, F., Hairi, N. N., & Choo, W. Y. (2019). Social support and depression among community dwelling older adults in Asia: A systematic review. *BMJ Open*, 9(7), e026667. <https://doi.org/10.1136/bmjopen-2018-026667>
- Muhammad, T., & Al-Shaghdari, F. (2024). Islamic social finance system: An alternative tool for tackling educational setbacks in Northern Nigeria. *Journal of Islamic Marketing*, 15(11), 3115–3136.
- Muhammad, T., & Al-Shaghdari, F. (2025). Waqf microfinance as an alternative and sustainable government empowerment tool towards women in Northern Nigeria: A perceptual analysis. *Journal of Business and Socio-economic Development*, 5(4), 338–354. <https://doi.org/10.1108/JBSED-11-2024-0124>
- O'Connor, G. E., Newmeyer, C. E., Wong, N. Y. C., Bayuk, J. B., Cook, L. A., Komarova, Y., & Warmath, D. (2019). Conceptualizing the multiple dimensions of consumer financial vulnerability. *Journal of Business Research*, 100, 421–430. <https://doi.org/10.1016/j.jbusres.2018.12.047>
- Rayampatt, M. C., & Rajan, S. K. (2025). Financial resilience as a key determinant in public health frameworks. *Discover Public Health*, 22(1), 717. <https://doi.org/10.1186/s12982-025-01144-x>
- Sarstedt, M., Hair, J. F., Pick, M., Liengaard, B. D., Radomir, L., & Ringle, C. M. (2022). Progress in partial least squares structural equation modeling use in marketing research in the last decade. *Psychology & Marketing*, 39(5), 1035–1064. <https://doi.org/10.1002/mar.21640>
- Seldal, M. N., & Nyhus, E. K. (2022). Financial vulnerability, financial literacy, and the use of digital payment technologies. *Journal of Consumer Policy*, 45(2), 281–306.
- Suh, E. (2022). Can't save or won't save: Financial resilience and discretionary retirement saving among British adults in their thirties and forties. *Ageing & Society*, 42(12), 2940–2967. <https://doi.org/10.1017/S0144686X2000050X>
- Tadai, M. E., Straughan, P. T., Cheong, G., Yi, R. N. W., & Er, T. Y. (2023). The effects of SES, social support, and resilience on older adults' well-being during COVID-19: Evidence from Singapore. *Urban Governance*, 3(1), 14–21. <https://doi.org/10.1016/j.ugi.2022.11.001>
- Thoits, P. A. (2011). Mechanisms linking social ties and support to physical and mental health. *Journal of Health and Social Behavior*, 52(2), 145–161. <https://doi.org/10.1177/0022146510395592>
- van der Meulen Rodgers, Y., Zveglic, J. E., Jr., Ali, K., & Xue, H. (2025). The role of family support in the well-being of older people: Evidence from Malaysia and Viet Nam. *Journal of Asian Economics*, 98, 101937.
- Xiao, J. J., & O'Neill, B. (2016). Consumer financial education and financial capability. *International Journal of Consumer Studies*, 40(6), 712–721. <https://doi.org/10.1111/ijcu.12285>
- Zain, N. S., & Hassan, R. (2021). What can Waqf organisations learn from non-profit organisations on accountability? A proposal for social impact measurement. In *International Conference on Business and Technology* (pp. 151–165). Springer.