

Retirement savings behaviour: The extended interactive theory of planned behaviour among Malaysian civil servants

Attia Azarina Amirludin¹, Mohamad Nizam Jaafar², Sylvia Nabila Azwa Ambad³

¹ Faculty of Business and Management, Universiti Teknologi MARA Cawangan Shah Alam, Universiti Teknologi MARA, 40000 Shah Alam, Selangor, Malaysia,

² Arshad Ayub Graduate Business School, Universiti Teknologi MARA, 40000 Shah Alam, Selangor, Malaysia,

³ Faculty of Business and Management, Universiti Teknologi MARA Cawangan Sabah, 88997 Kampus Kota Kinabalu, Sabah, Malaysia;

^{1st}2023600674@student.uitm.edu.my, ^{2nd}mnizam7520@uitm.edu.my, ^{3rd}nabila1793@uitm.edu.my

¹ <https://orcid.org/0009-0005-5117-7521>; ² <https://orcid.org/0009-0001-2324-0926>; ³ <https://orcid.org/0000-0003-1693-8514>

Corresponding Author*: mnizam7520@uitm.edu.my

Abstract: Malaysian civil servants face interconnected challenges in building adequate retirement savings. These challenges include financial behaviour, rising living costs, limited financial literacy, fiscal constraints, and inconsistent policy support. Addressing these issues is essential for strengthening retirement preparedness and long-term financial security. Nevertheless, empirical evidence on the financial and policy-related determinants of retirement saving behaviour among Malaysian civil servants remains limited. This study investigates retirement saving behaviour using an extended Interactive Theory of Planned Behaviour framework. It incorporates tax incentives from a behavioural economics perspective and examines the moderating role of perceived government policies based on rational choice theory. A quantitative, cross-sectional survey collected data from 275 permanent civil servants in Grades 9–15 with income tax records. Data were analysed using PLS-SEM. The findings show that attitude and tax incentives positively influence retirement saving behaviour, whereas subjective norms are not significant. Perceived behavioural control and perceived government policies do not moderate the relationships between attitude, subjective norms, and retirement saving behaviour. These findings highlighted the importance of financial incentives while indicating that policy perceptions have limited moderating influence. Future research should adopt longitudinal or experimental designs to establish causal relationships and assess the long-term effects of policy reforms and financial education on retirement planning. The findings provide practical guidance for policymakers, employers, and financial institutions to develop targeted retirement education, strengthen incentive mechanisms, and improve financial resilience among public sector employees.

Keywords: Interactive theory of planned behaviour, Malaysian civil servants, moderating role, perceived government policy, retirement savings behaviour, tax incentives.

1. Introduction

An ageing population and rising living costs have heightened concerns about retirement preparedness. The Department of Statistics Malaysia (DOSM, 2026) projects that the proportion of individuals aged 65 and above will increase from 7.6% (2.6 million) in 2024 to 8.0% (2.7 million) in 2025. Consequently, the government has introduced tax incentives and structured retirement schemes to encourage personal savings. These measures aim to make retirement savings more appealing and to increase contribution rates. However, despite these efforts, many individuals do not have sufficient retirement funds (Azmi et al., 2023; Mansor et al., 2015; Mohd Ishak et al., 2022). In Malaysia, the minimum wage is set at MYR1,700 (USD435.71), which includes salary and allowances of civil servants. Mohamed et al. (2024) found differing views on income adequacy among Malaysian civil servants. Most respondents



(34.7%) considered their income adequate for many, though not all, of their needs, while 17.1% regarded it as insufficient (Mohamed et al., 2024).

Rising living costs and higher household expenditure on necessities require civil servants to strengthen their retirement savings. The government increased salaries by 8% in December 2024 and by 7% in January 2026. However, inflation and ongoing price increases continue to raise the cost of living (The Star Online, 2024). Furthermore, Employee Provident Fund (EPF) has set targets for retirement income adequacy at MYR1.3 million (enhanced tier), MYR650,000 (adequate tier), and MYR390,000 (basic tier). Achieving these targets is a major concern as it needs high levels of discipline and self-control in saving money (Tan et al., 2026). These thresholds serve as benchmarks for Malaysian civil servants' savings for their retirement income adequacy. Therefore, civil servants are facing growing financial pressure to manage current expenses while also preparing for retirement.

Few studies have examined how attitude, subjective norms, perceived behavioural control, tax incentives, and perceived government policy jointly influence retirement saving behaviour among Malaysian civil servants. They used an integrated framework that draws from the interactive theory of planned behaviour, the behavioural economics model, and rational choice theory. Most prior studies relied on the conventional TPB, which does not adequately capture the long-term nature of RSB, as its benefits often develop gradually (Kumaraguru et al., 2022; Magwegwe & Lim, 2021; Satsios & Hadjidakis, 2018; She et al., 2024; Wahab et al., 2022; Yusof et al., 2018). Additionally, previous research mostly neglected the role of emotions, psychological biases, and economic factors that may better explain RSB. The ITPB does not sufficiently address the intention-behaviour gap, which is particularly evident in RSB. Another limitation of the ITPB concerns time, as it provides no clear guidance on when researchers should measure behaviour after intention formation, especially in the context of RSB. Although several studies examined specific behaviours (Alkhawaja & Albaity, 2022; Shabor Rameli & Marimuthu, 2018; Suh, 2022; Tomar et al., 2021), few assessed perceived behavioural control as a moderating factor within the TPB framework for RSB (Hagger et al., 2022; La Barbera & Ajzen, 2021).

Accordingly, this study proposes a framework that applies the ITPB and incorporates perceived behavioural control as a moderating variable. While some research has considered the behavioural effects of tax incentives, limited evidence exists on how these policies affect the amount, timing, or structure of savings. Although widely used, tax incentives show mixed results. Some studies report modest gains in contributions and planning, while others find minimal effects (Attanasio et al., 2004; Ayuso et al., 2019; Cifuentes, 2005; Lindeboom & Montizaan, 2020).

Evidence on perceived government policy also remains inconclusive. Some findings suggest that perceptions of fairness and transparency influence investment decisions (Ardiansyah et al., 2024). However, other studies find no significant role for these perceptions in linking awareness to compliance (Ningrum & Setiyawati, 2022). Responses to financial incentives often depend on how individuals perceive policy credibility and government support (Madrian, 2014). Recent research shows that positive perceptions of policy can strengthen the effects of tax incentives (Citci & Yanikkaya, 2024). These mixed findings highlight the need to examine whether perceived government policy moderates the impact of tax incentives on saving behaviour in Malaysia.

This study proposes a framework that includes tax incentives, contributions, and the moderating role of perceived government policy. International research indicates that tax-favoured accounts often lead to asset reallocation rather than increased net savings (Attanasio et al., 2004; Ayuso et al., 2019; Chetty et al., 2013). In contrast, automatic features and direct subsidies, such as tax incentives, tend to have stronger and more lasting effects, especially among low- and middle-income groups (Eren & Genç İleri, 2022; Falk & Karamcheva, 2022). This study explores whether Malaysian civil servants respond more effectively to tax-based policies, an area still under-researched in developing contexts.

Civil servants offer a relevant case for this study. Although they benefit from job security and pension access, many lack adequate financial preparation for retirement. Even those with higher financial literacy often do not plan for retirement (Tan & Singaravelloo, 2020). Other studies have highlighted persistent knowledge gaps and behavioural patterns that increase financial risk in later life (Mohd Ishak et al., 2022). These patterns suggest that both policy design and individual psychology influence saving behaviour. In this context, perceptions of government policy are crucial, as intervention success depends on structure as well as on trust, fairness, and credibility.

This study draws on the theory of planned behaviour, behavioural economics, and rational choice theory, with four key objectives: (1) to examine the effect of attitude and subjective norms on retirement saving behaviour among Malaysian civil servants; (2) to analyse the effect of tax incentives on retirement saving behaviour; (3) to investigate the moderating effect of perceived behavioural control in the relationships between attitude, subjective norms, and

retirement saving behaviour among Malaysian civil servants; and (4) to determine whether perceived government policy moderates these relationships. Data were collected through an online survey administered via Google Forms, yielding 275 valid responses. The analysis was performed using PLS-SEM.

Grounded in behavioural economics and rational choice theory, this study proposes that interventions such as subsidies, automatic enrolment, and revised scheme structures can influence saving behaviour by altering decision contexts and incentives (Chetty et al., 2013; Thaler & Benartzi, 2004). Considering perceived government policy in the analysis provides a deeper understanding of how institutional design and subjective beliefs work together to affect retirement saving.

2. METHODOLOGY

The current study investigates whether perceived government policy moderates the relationships between attitudes, subjective norms, tax incentives, and retirement saving behaviour among Malaysian civil servants. This section describes the research design and methodology applied in this study, including the target population, sampling technique, sample size, data collection procedures, research instruments, and data analysis methods.

A. Research Approach and Research Design

A deductive approach was employed to test hypotheses derived from established theories, consistent with a positivist quantitative paradigm. The study used a cross-sectional design to collect data at a single point in time, enabling an efficient and cost-effective examination of variable relationships. Data were collected from Malaysian civil servants between February and March 2025.

B. Research Population and Sampling Method

This study examined Malaysian civil servants holding permanent positions under Federal service schemes, State service schemes, and local authorities. The target group consists of officers in Grades 9 to 15 who have registered income tax files. Purposive sampling, a non-probability method, was applied to select participants based on permanent employment status, tax file ownership, and grade level. Data collection was conducted efficiently and cost-effectively to ensure national coverage and to examine factors affecting retirement savings behaviour.

C. Sample Size

Using G*Power 3.1 (medium effect, $\alpha = .15$, power = 0.90, 7 predictors), the minimum required sample size for structural equation modelling (SEM) was calculated to be 130. To enhance the robustness of the analysis and address potential non-response, 275 valid questionnaires were collected and analysed. This sample size exceeded the minimum requirement and provided sufficient statistical power for hypothesis testing using PLS-SEM.

D. Data Collection Procedure and Instrumentation

Data were collected through a structured online survey administered via Google Forms, with strict measures to maintain respondent confidentiality. The collection period spanned approximately three weeks and faced several challenges, mainly delays in responses from participating facilities. These delays resulted from staffing shortages and scheduling limitations, which required repeated follow-up reminders.

To ensure content validity, the questionnaire was adapted from previously validated instruments. Items were selected from established studies and underwent translation and back-translation between Malay and English to ensure linguistic accuracy and cultural relevance.

The final instrument comprised 26 items measuring constructs such as attitude, subjective norms, tax incentives, perceived behavioural control, perceptions of government policy, and retirement savings behaviour. Responses were captured using a five-point Likert scale ranging from “strongly disagree” to “strongly agree.” Retirement savings behaviour was measured separately using a seven-point Likert scale with the same response options.

E. Techniques of Data Analysis

Structural Equation Modelling (SEM): Structural Equation Modelling (SEM) is a multivariate analysis technique that allows researchers to assess multiple variable relationships at the same time (Hair et al., 2014; Hair Jr. et al., 2017). It provides a structured approach to examining retirement savings behaviour.

Partial Least Squares Structural Equation Modelling (PLS-SEM): The study used Partial Least Squares Structural Equation Modelling (PLS-SEM) with SmartPLS software. This method was selected due to its capacity to manage complex models with multiple constructs, its predictive orientation, and its appropriateness for small sample sizes.

Measurement Model Evaluation: The measurement model was assessed to ensure its reliability and validity prior to hypothesis testing. Composite reliability (CR) values exceeded 0.70, indicating adequate reliability. Convergent validity was supported by average variance extracted (AVE) values of 0.50 or higher and factor loadings of at least 0.50. Discriminant validity was confirmed as all Heterotrait-Monotrait (HTMT) ratios were below 0.90.

Structural Model Evaluation: After validating the measurement model, the structural model was assessed using a bootstrapping procedure with 10,000 resamples to examine the significance and strength of the proposed relationships. All Variance Inflation Factor (VIF) values were below 3.3, indicating the absence of multicollinearity. The analysis included both direct and moderating effects, with results presented using standardised beta coefficients, t-statistics, p-values, effect sizes (f^2), and confidence intervals.

3. RESULTS & DISCUSSION

A. Results

This section outlines the respondents' profile, common method variance, and model assessments, which consist of the measurement model and structural model.

1) Respondent Profile Analysis: A structured survey instrument, adapted from validated questionnaires, was developed and prepared in English and Malay. It included 26 items addressing attitude towards retirement savings, subjective norms, tax incentives, perceived behavioural control, perceived government policy, and retirement savings behaviour. The constructs were measured using a 5-point Likert scale, while retirement savings behaviour was assessed using a 7-point Likert scale. Table 1 displays the respondents' characteristics. Descriptive analyses were conducted using SPSS version 29. As shown in Table 1, 60% of respondents were women, 60.4% were aged between 40 and 49 years, and 78.9% have more than 10 years of experience. Most held a Bachelor's degree (55.3%) and reported a monthly income between MYR7,690 and MYR9,449 (22.9%). Additionally, 6.5% reported having no savings, while 10.9% had less than MYR1,000 in savings.

TABLE 1
PROFILE OF THE RESPONDENTS

Demographic	Percentage (%)
Gender	
Male	40
Female	60
Age	
<30 years old	2.9
30 - 39 years old	25.8
40 - 49 years old	60.4
50 - 59 years old	10.9
Education	
Bachelor's Degree	55.3
Master's Degree	39.3

Doctorate/ PhD	2.2
Others (Diploma)	3.3
Position	
Grade 41/42 (SSM)@Grade 9(SSPA)	11.6
Grade 43/44 (SSM)@Grade 10(SSPA)	41.5
Grade 47/48 (SSM)@Grade 12(SSPA)	26.2
Grade 51/52 (SSM)@Grade 13(SSPA)	16.4
Grade 53/54 (SSM)@Grade 14(SSPA)	4.4
Grade 55/56 (SSM)@Grade 15(SSPA)	0.4
Years of Service	
1- 3 years	4.6
4-6 years	7
7-9 years	9.5
≥ 10 years	78.9
Retirement Option	
Pension (Defined Benefit)	94.5
Contribution (Define Contribution, e.g., EPF)	3.6
The Armed Forces Fund	1.8
Current Monthly Income	
< MYR2,560	0.4
MYR2,560 - MYR3,439	2.2
MYR3,440 – MYR4,309	4.0
MYR4,310 - MYR5,249	10.9
MYR5,250 - MYR6,339	18.5
MYR6,340 - MYR7,689	19.6
MYR7,690 - MYR9,449	22.9
MYR9,450 - MYR11,819	14.2
MYR11,820 - MYR15,869	5.8
≥MYR15,870	1.5

Savings Amount	
No saving	6.5
<MYR1000	10.9
MYR1,000 – MYR5,000	19.6
MYR5,001 – MYR10,000	9.5
MYR10,001 – MYR15,000	9.5
MYR15,001 - MYR20,000	3.6
MYR20,001- MYR25,000	4.0
MYR25,001-MYR30,000	4.4
MYR30,001-MYR35,000	4.0
MYR35,001-MYR40,000	3.6
MYR40,000-MYR45,000	1.8
>MYR45,000	22.5

TABLE 2

DESCRIPTIVE ANALYSIS OF THE VARIABLES

Constructs	Mean	Std. Deviation
Retirement Savings Behaviour	4.536	1.462
Attitude	4.371	0.704
Subjective Norms	4.096	0.734
Tax Incentives	3.879	0.760
Perceive Behavioural Control	3.826	0.824
Perceived Government Policy	3.589	0.732

2) Common Method Variance (CMV): This study used a single data source and method, requiring an assessment of common method variance (CMV) due to its potential to affect construct validity and introduce bias. To address this probability, a theoretically unrelated marker variable, namely attitudes toward the colour blue, was included for all endogenous constructs, following established guidelines (Lindell & Whitney, 2001; Miller & Simmering, 2023; Podsakoff et al., 2024). Marker variables were used to detect and adjust CMV by examining whether shared method bias influences observed relationships. In this study, the marker variable had a minimal effect: R^2 changes were below 10% (0.3%), and path coefficients remained stable. As shown in Tables 3 and 4, these results suggest that CMV did not significantly affect the findings, indicating the absence of substantial single-source bias.

TABLE 3

R2 VALUES OF THE BASELINE AND MARKER-ADJUSTED MODELS

Endogenous Construct	Baseline Model	Adjusted Model
RSB	0.298	0.299

TABLE 4

PATH COEFFICIENT & SIGNIFICANCE OF THE BASELINE AND METHOD FACTOR MODELS

Relationship	Baseline Model (without Marker Variable)	Method Factor Model (with Marker Variable)
	β	P values
MARKV -> RSB	NA	NA
ATRS -> RSB	0.182	0.004
SN -> RSB	0.027	0.344
TI -> RSB	0.147	0.021
PGP x TI -> RSB	0.084	0.107
PGP x ATRS -> RSB	0.083	0.151
PGP x SN -> RSB	-0.113	0.073
PBC x ATRS -> RSB	-0.004	0.479
PBC x SN -> RSB	0.088	0.140

3) Model Assessment: The data were analysed using SmartPLS version 4.1.0.3. A reflective measurement model was employed, where latent variables explained their associated observed indicators. Reliability and validity were assessed, as recommended by Cheah et al. (2018) and Hair et al. (2019). Bootstrapping with 10,000 resamples tested the significance of loadings, weights, standard errors, and path coefficients, using percentile-corrected confidence intervals and a one-tailed test at the 0.05 significance level. Following the two-step approach, first, the measurement model was evaluated, followed by the structural model to test the hypotheses (Anderson & Gerbing, 1991).

B. Measurement Model Analysis

A measurement model demonstrates validity and reliability when factor loadings exceed 0.5; the average variance extracted (AVE) is above 0.5, and composite reliability (CR) is greater than 0.7. In this study, all AVE values were above 0.5, and all CR values exceeded 0.7. Most factor loadings met the recommended threshold, with only one or two slightly below 0.708 (Hair et al., 2019). One item (PGP7) with a loading below 0.5 (0.343) was excluded. Table 5 presents the measurement model used in this study.

Discriminant validity was assessed using the Heterotrait-Monotrait (HTMT) ratio (Table 6), which provides a more stringent criterion than the Fornell-Larcker approach (Hair et al., 2019). In line with previous PLS studies, all HTMT values are below the recommended threshold of 0.90 (Hair & Alamer, 2022; Henseler et al., 2015).

TABLE 5
MEASUREMENT MODEL (CONVERGENT VALIDITY)

Constructs	Items	Loadings	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Retirement Savings Behaviour			0.932	0.948	0.787
	RSB1	0.830			
	RSB2	0.867			
	RSB3	0.922			
	RSB4	0.924			

	RSB5	0.889			
Attitude Towards Retirement Savings			0.894	0.934	0.826
	ATRS1	0.933			
	ATRS2	0.938			
	ATRS3	0.853			
Subjective Norms			0.844	0.893	0.676
	SN1	0.874			
	SN2	0.771			
	SN3	0.783			
	SN4	0.854			
Tax Incentives			0.875	0.908	0.667
	TI1	0.839			
	TI2	0.870			
	TI3	0.862			
	TI4	0.856			
	TI5	0.632			
Perceived Behavioural Control			0.877	0.924	0.803
	PBC1	0.841			
	PBC2	0.921			
	PBC3	0.924			
Perceived Government Policies			0.889	0.917	0.653
	PGP1	0.845			
	PGP2	0.884			
	PGP3	0.721			
	PGP4	0.874			
	PGP5	0.890			
	PGP6	0.588			

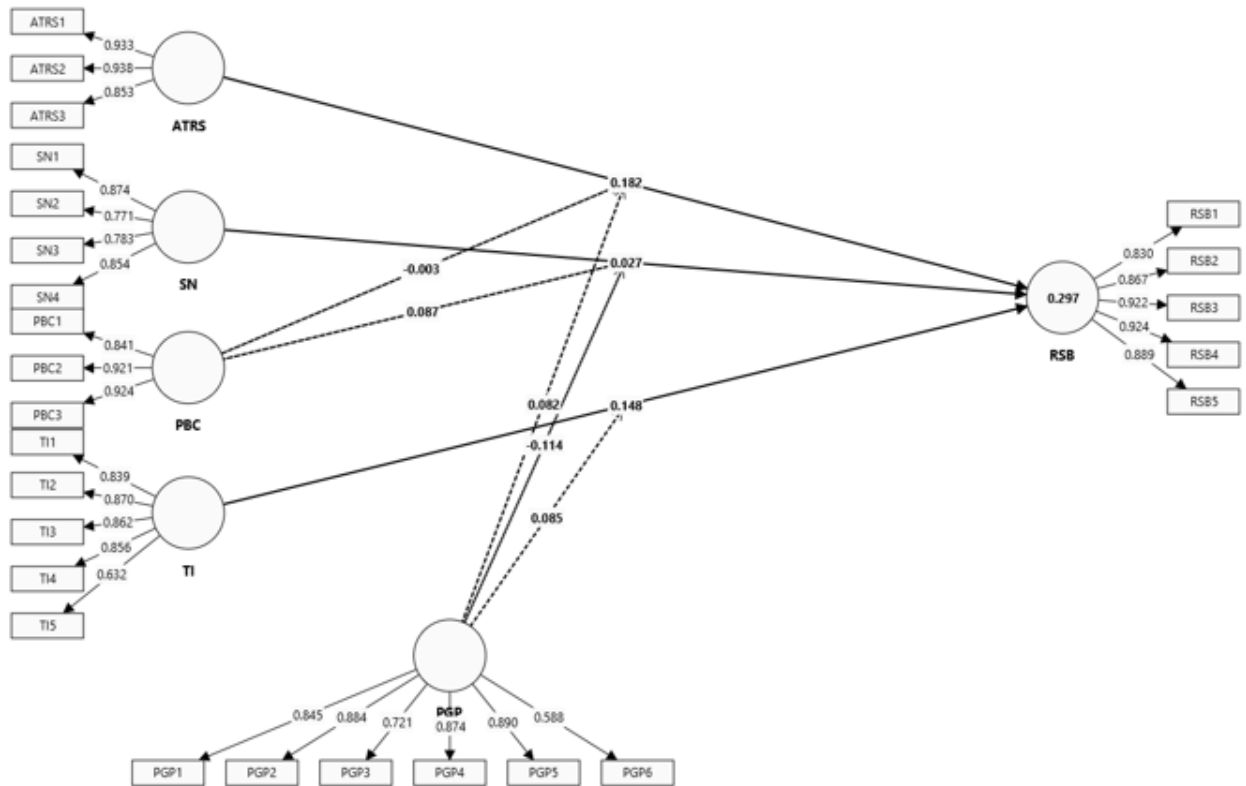


Figure 2: Measurement Model

TABLE 6

DISCRIMINANT VALIDITY USING HTMT CRITERION

	ATRS	PBC	PGP	RSB	SN	TI	PGP x SN	PGP x ATRS	PBC x ATRS	PBC x SN	PGP x TI
ATRS											
PBC	0.256										
PGP	0.099	0.394									
RSB	0.326	0.491	0.238								
SN	0.534	0.46	0.266	0.342							
TI	0.325	0.337	0.2	0.347	0.475						
PGP x SN	0.06	0.044	0.091	0.041	0.186	0.101					
PGP x ATRS	0.219	0.087	0.256	0.055	0.081	0.039	0.324				
PBC x ATRS	0.162	0.083	0.042	0.018	0.027	0.069	0.132	0.408			
PBC x SN	0.01	0.046	0.026	0.078	0.058	0.092	0.432	0.196	0.417		
PGP x TI	0.03	0.042	0.11	0.082	0.085	0.026	0.57	0.325	0.073	0.258	

C. Structural Model Analysis

The structural model in PLS-SEM represents the hypothesised relationships between latent variables, such as the expected influence of tax incentives on retirement savings behaviour in this study. As the data did not meet the assumption of multivariate normality, evidenced by Mardia's multivariate skewness above 3 and kurtosis above 20, bootstrapping with 10,000 resamples was used. This procedure allowed for the assessment of collinearity, path coefficients, standard errors, *t*-values, and *p*-values (Becker et al., 2023). The marker variable indicated no common method bias; thus, a full collinearity assessment was not necessary. To reduce reliance on *p*-values, the analysis also reported *t*-values, confidence intervals, and effect sizes (Hahn & Ang, 2017). Direct effect sizes were interpreted using thresholds of 0.02, 0.15, and 0.35 for small, medium, and large effects, respectively (Chin, 1998, 2010), focusing on both statistical and practical significance (Sullivan & Feinn, 2012). Meanwhile, the indirect effect sizes of moderation use the thresholds of 0.005, 0.01, and 0.025 for small, medium, and large (Kenny, 2018; Hair et al., 2021). Reported outcomes included path coefficients, standard errors, *R*² values, *t*-values, *p*-values, confidence intervals, and effect sizes (*f*²), as shown in Table 7.

TABLE 7
HYPOTHESIS TESTING OF DIRECT RELATIONSHIPS

Hypotheses	Relationships	Std.Beta	Std. Dev	t-value	P-values	PCI LL	PCI UL	f2	Effect size	Decision
H1	ATRS -> RSB	0.182	0.068	2.664	0.004	0.064	0.286	0.034	small	supported
H2	SN -> RSB	0.027	0.067	0.409	0.341	-0.077	0.142	0.001	none	not supported
H3	TI -> RSB	0.148	0.073	2.028	0.021	0.023	0.263	0.024	small	supported
H4	PBC x ATRS -> RSB	-0.003	0.072	0.040	0.484	-0.104	0.130	p<0.001	none	not supported
H5	PBC x SN -> RSB	0.087	0.081	1.074	0.141	-0.049	0.221	0.007	small	not supported
H6	PGP x ATRS -> RSB	0.082	0.080	1.025	0.153	-0.050	0.211	0.006	small	not supported
H7	PGP x SN -> RSB	-0.114	0.078	1.455	0.073	-0.238	0.016	0.013	medium	not supported
H8	PGP x TI -> RSB	0.085	0.068	1.248	0.106	-0.021	0.202	0.009	small	not supported

A. Discussion

This section discusses each of the effects of the relationships between attitude, subjective norms, and tax incentives towards retirement savings behaviour. Additionally, this section deliberates the moderating role of perceived behavioural control in the relationships between attitude and subjective norms towards retirement savings behaviour among civil servants in Malaysia. The moderating role of perceived government policies in the relationship between all independent variables and retirement savings behaviour was also discussed.

1) Attitude and Subjective Norms on Retirement Savings Behaviour Among Malaysian Civil Servants

Attitude significantly influences behaviour through both cognitive (e.g., favourable evaluations that support action) and affective (e.g., positive emotions that reinforce behaviour) mechanisms. In retirement planning, a positive attitude tends to encourage proactive saving (Magwegwe & Lim, 2021) and supports constructive financial behaviours, including retirement savings behaviour (RSB)(She et al., 2024). Individuals' attitude toward retirement savings reflects both their emotional readiness to contribute to retirement plans and their belief in the importance of

financial preparedness (Afthanorhan et al., 2020). This study confirms the reliability and validity of the attitude measured, consistent with prior research in Malaysia (e.g., among Generation Y and civil servants) and international findings, which report a positive effect between attitude and RSB (Afthanorhan et al., 2020; Ameliawati & Setiyani, 2018; Atmaningrum et al., 2021; Bongini & Cucinelli, 2019; Kumaraguru & Geetha, 2021a; Mohd Ishak et al., 2022; Raut et al., 2018; Ugwu & Idemudia, 2023). Cheung et al. (2023) suggested that a positive attitude may indicate a higher willingness to accept investment risk, which can lead to improved returns and better retirement savings outcomes.

In contrast, results related to subjective norms did not align with expectations. Although the mean score was high, subjective norms showed low variability and no statistically significant association with RSB. The outcome suggests a ceiling effect, where responses concentrate at the upper end of the scale, limiting the model's sensitivity to detect associations. This pattern may reflect the homogeneity of the sample, which comprised mainly individuals aged 40–49 with long service history and membership in a defined-benefit pension scheme. Within the Malaysian civil service, retirement planning is institutionally and culturally embedded, making the expectation to save for retirement a widely shared norm. As a result, variability in perceived social pressure is minimal. Moreover, the presence of guaranteed pension benefits may reduce the perceived need for additional savings, shifting behavioural variation toward factors such as financial goals, investment knowledge, and disposable income. Therefore, the absence of a significant finding likely results from measurement constraints and sample uniformity, rather than a genuine lack of relationship between subjective norms and RSB.

2) Tax Incentives on Retirement Savings Behaviour Among Malaysian Civil Servants

This study confirmed the reliability and suitability of the measurement scales in capturing the construct of tax incentives. The results show a positive relationship between tax incentives and retirement saving behaviour. These findings align with behavioural economics theory, which suggests that well-designed tax incentives can support long-term financial decisions by reducing the impact of cognitive biases, emotional responses, habitual patterns, and social pressures (Duckworth et al., 2018; Knoll, 2010; Thaler & Benartzi, 2004).

The demographic data indicate that all participants were taxpayers familiar with the tax system. Most were aged between 40 and 49, and 78.9% had over ten years of work experience. Many participants stated that government incentives offered financial advantages for retirement savings, which appeared to strengthen their saving behaviour. Overall, the findings suggest a significant relationship between tax incentives and retirement saving behaviour.

In Malaysia, individuals may claim annual tax relief of up to MYR3,000 for their contributions to a Private Retirement Scheme or a deferred annuity until the 2030 assessment year. Taxpayers may also claim an additional relief of up to MYR3,000 for voluntary Employees Provident Fund (EPF) contributions, including top-up payments, when combined with life insurance premiums. In addition, they may deduct up to MYR7,000 for compulsory EPF contributions (EPF, 2026).

Although taxpayers can access these incentives with relative ease, the low annual limits restrict their overall impact. In contrast, Singapore, the United Kingdom, the United States, Canada, and Australia permit higher contribution limits that qualify for preferential tax treatment. These systems involve greater complexity, and taxpayers often receive the tax benefits at withdrawal rather than at contribution (Australian Tax Office [ATO], 2026; Canada Revenue Agency, 2026; GOV.UK, 2026; Internal Revenue Service [IRS], 2026; Inland Revenue Authority of Singapore [IRAS], 2026). By comparison, New Zealand provides tax credits or government subsidies instead of deductions (New Zealand Legislation, 2026).

3) Perceived Behavioural Control Moderates the Relationship Between Attitude and Subjective Norms towards Retirement Savings Behaviour Among Malaysian Civil Servants

Perceived behavioural control (PBC) refers to individuals' belief in their ability to perform a behaviour and manage the necessary conditions for its execution (La Barbera & Ajzen, 2021; Magwegwe & Lim, 2021; She et al., 2024). As previous research has reported inconsistent associations between attitudes, subjective norms, and retirement savings behaviour, this study examined whether PBC moderates these relationships, in line with earlier moderation-based studies (Castanier et al., 2013; Ho et al., 2022; Liu et al., 2022; Shariff & Ishak, 2021; She et al., 2024; Yeo et al., 2023). The current study hypothesised that higher PBC would strengthen the positive effects of attitudes and subjective norms on retirement savings behaviour among Malaysian civil servants. However, the findings did not support this hypothesis; PBC did not significantly moderate these relationships, despite a relatively high mean score ($M = 3.826$, $SD = 0.824$), which warrants cautious interpretation.

A likely explanation is a ceiling effect, where PBC scores clustered near the upper limit of the scale, suggesting that most respondents felt a high level of control over retirement saving. This limited variability reduces the capacity of PBC to explain differences in how attitudes or norms influence behaviour. The sample characteristics support this interpretation; a large proportion were in advanced career stages (60.4% aged 40–49; 78.9% with over 10 years of service) and were likely to depend on the government pension scheme, which may contribute to a sense of retirement preparedness. In such contexts, external influences such as attitudes and social norms may have a limited effect, as behaviour is primarily shaped by institutional expectations. Even among middle- to high-income earners, reported savings are relatively low, often below MYR5,000. This indicates that a strong sense of control does not necessarily lead to more voluntary saving, particularly when long-term saving is perceived as deferrable. The absence of a moderating effect likely stems from two factors: uniformly high levels of perceived control and institutional or career-related conditions, such as reliance on pensions and structured retirement plans. These factors diminish the influence of PBC in shaping the effects of attitudes and norms on retirement savings behaviour.

The non-significant moderating effect of perceived behavioural control on the relationships between attitude, subjective norms, and retirement savings behaviour among Malaysian civil servants reflects structural and contextual conditions. The theory of planned behaviour proposes that perceived behavioural control exerts a stronger influence when behaviour depends on individual choice and capacity (Ajzen, 1991). Malaysian civil servants participate in a defined benefit pension scheme that mandates salary deductions and provides institutional retirement assurances. This arrangement reduces the role of individual control in shaping saving decisions. When institutions structure or secure a behaviour, the influence of perceived control declines. Research on automatic savings mechanisms supports this pattern (Thaler & Benartzi, 2004).

Malaysia's collectivist culture further strengthens the role of social expectations in financial decisions and reduces individual agency (Hofstede, 2001). Methodological factors may also contribute to the finding. Limited variation in perceived behavioural control can weaken interaction effects in regression analysis (Aiken & West, 1991). Therefore, the non-significant moderating effect reflects contextual conditions rather than a limitation of the theoretical framework.

4) Perceived Government Policy Moderates Relationships Between Attitude, Subjective Norms, and Tax Incentives towards Retirement Savings Behaviour Among Malaysian Civil Servants

Perceived government policy is inherently more subjective than formal policy, but it can offer a clearer understanding of public responses. It reflects how individuals interpret policy implementation and effectiveness rather than how the policy is formally written. In this study, perceived government policy refers to individuals' assessments of how effectively the government promotes behaviours such as retirement savings behaviour (RSB) (Xu et al., 2017). Drawing on interdisciplinary evidence, the study hypothesised that perceived government policy would strengthen the positive relationships between attitude toward retirement saving, subjective norms, tax incentives, and RSB among Malaysian civil servants (Abd Rahman et al., 2024; Citci & Yanikkaya, 2024; Hong et al., 2019; Liao et al., 2018; Ningrum & Setiyawati, 2022; Xu et al., 2025; Zhang, 2013). However, despite strong measurement reliability and validity, perceived government policy did not significantly moderate these relationships. This finding is consistent with previous research suggesting that institutional context and policy stability can reduce the behavioural impact of perceived policy (Attanasio & Rohwedder, 2003).

Descriptive results help explain this non-significant moderation. Respondents reported moderately positive perceptions of government policy (mean = 3.589 out of 5; SD = 0.732), but the low standard deviation indicates limited variability, with most responses falling in the mid-to-upper range. This outcome suggests a possible ceiling effect, with minimal evidence of a floor effect, which limits the variance needed for perceived policy to act as an effective moderator (Šimkovic & Träuble, 2019). A narrow distribution weakens the statistical ability to detect moderation, as the moderator does not sufficiently distinguish between respondents (Isikhan & Zararsiz, 2022). Most respondents already held moderately favourable views, leaving little room for perceived policy to influence the tested relationships.

Demographic and institutional factors also help explain the limited moderating role of perceived policy. Most respondents were aged 40–49, had over 10 years of service, and were enrolled in a defined benefit pension scheme rather than a contributory system. The guaranteed retirement income likely reduces reliance on perceptions of government policy in shaping RSB, as retirement security is already assured (Attanasio & Rohwedder, 2003). The study distinguishes between objective policy tools, such as tax incentives, and the psychological construct of perceived government policy. While tax incentives operate through financial mechanisms, perceived policy captures how individuals interpret and respond to government actions (Kozol, 2025). The absence of significant moderation may indicate a gap between the existence of policy tools and how civil servants internalise them. This underlines the need

to treat perceived government policy as a distinct construct rather than as a proxy for policy availability (Iriani et al., 2021; Ningrum & Setiyawati, 2022).

4. CONCLUSION

This study reveals the connection between attitude and tax incentives and retirement savings behaviour among Malaysian civil servants, rather than subjective norms, based on evident from PLS-SEM analysis. Perceived behavioural control does not moderate attitude and subjective norms towards retirement savings behaviour among Malaysian civil servants. Moreover, perceived government policies do not strengthen the relationships between attitude, subjective norms, tax incentives, and retirement savings behaviour. By analysing these variables, the study expands current understanding in this field.

The findings address previous calls for research into factors that may encourage Malaysian civil servants to increase their retirement savings (Asch et al., 2005; Dini Wulandari, 2022; Grable et al., 2020; Jaimes & Westerhout, 2023; Kumaraguru & Geetha, 2021b; Mohamed Abdul Kadir et al., 2021; Prasetyo et al., 2020). Although earlier studies have linked government policy with financial behaviour using rational choice theory (Citci & Yanikkaya, 2024; Ghadwan et al., 2023; Madrian, 2012), this study confirms and extends those findings. It demonstrates that attitude and tax incentives directly affect retirement savings behaviour, offering a foundation for future empirical studies and theoretical development.

In conclusion, attitude and the provision of tax incentives influence retirement savings behaviour among Malaysian civil servants; well-designed tax incentives may encourage Malaysian civil servants to save more for retirement. Malaysia has an established pension system that may affect civil servants' perceptions of the incentives to increase their savings for retirement. In addition, the lack of significant moderating effects from perceived behavioural control and government policy may result from ceiling or floor effects, as well as the security provided by defined-benefit pensions. This is especially relevant for late-career civil servants who have confidence in their retirement plans. Many respondents rely on the government pension system and have limited personal savings, which could lessen the impact of perceived control and policy attitudes on their retirement saving behaviour. These findings should be considered alongside statistical, perceptual, and demographic factors. Future research should include individuals from higher salary grades, non-taxable income brackets, private-sector roles, and informal employment to provide a more comprehensive understanding of retirement savings behaviour across diverse socioeconomic and occupational groups.

Acknowledgement

The authors would like to acknowledge the support of the Public Service Department of Malaysia, Universiti Teknologi Mara (UiTM), Cawangan Shah Alam and the Faculty of Business Management, Universiti Teknologi MARA, Shah Alam, Selangor, Malaysia, for providing the facilities for this research.

References

1. Abd Rahman, N. A. S., Ju, S.-Y., Razali, J. R., Ridzuan, M. R., & Kong, L.-K. (2024). The influence of attitude, subjective norms, and perceived behavioral control on vaccination intention among teachers: The moderating role of perceived policy effectiveness. *Journal of Nusantara Studies (JONUS)*, 9(1), 224–244. <https://doi.org/10.24200/jonus.vol9iss1pp224-244>
2. Afthanorhan, A., Mamun, A. Al, Zainol, N. R., Foziah, H., & Awang, Z. (2020). Framing the retirement planning behavior model towards sustainable wellbeing among youth: The moderating effect of public profiles. *Sustainability (Switzerland)*, 12(21), 1–24. <https://doi.org/10.3390/su12218879>
3. Aiken, L. S., & West, S. G. (1991). Multiple Regression: Testing and Interpreting Interactions. *London: Sage Publications Ltd.*
4. Ajzen, I. (1991). The Theory of Planned Behavior.
5. Alkhawaja, S. O., & Albaity, M. (2022). Retirement saving behavior: evidence from the UAE. *Journal of Islamic Marketing*, 13(2), 265–286. <https://doi.org/10.1108/JIMA-03-2020-0072>
6. Ameliawati, M., & Setiyani, R. (2018). The Influence of Financial Attitude, Financial Socialization, and Financial Experience on Financial Management Behavior with Financial Literacy as the Mediation Variable. *KnE Social Sciences*, 3(10), 811. <https://doi.org/10.18502/kss.v3i10.3174>
7. Anderson, J. C., & Gerbing, D. W. (1991). Predicting the performance of measures in a confirmatory factor analysis with a pretest assessment of their substantive validity. *Journal of Applied Psychology*, 76(5), 732–740. <https://doi.org/10.1037/0021-9010.76.5.732>
8. Ardiansyah, Hamzah, A., & Karyono, O. (2024). Islamic financial management behavior mediates sharia financial literacy and investment behavior. *Jurnal Ekonomi Syariah*, 12(1), 213–234. <https://doi.org/10.21043/equilibrium.v12i1.21851>

9. Asch, B., Haider, S. J., & Zissimopoulos, J. (2005). Financial incentives and retirement: Evidence from federal civil service workers. *Journal of Public Economics*, 89(2–3), 427–440. <https://doi.org/10.1016/j.jpubeco.2003.12.006>
10. Atmaningrum, S., Kanto, D. S., & Kisman, Z. (2021). Investment Decisions: The Results of Knowledge, Income, and Self-Control. *Journal of Economics and Business*, 4(1). <https://doi.org/10.31014/aior.1992.04.01.324>
11. Attanasio, O. P., Banks, J., & Wakefield, M. (2004). Effectiveness of tax incentives to boost (retirement) saving: Theoretical motivation and empirical evidence. <https://doi.org/10.1920/wp.ifs.2004.0433>
12. Attanasio, O. P., & Rohwedder, S. (2003). Pension wealth and household saving: Evidence from pension reforms in the United Kingdom. *American Economic Review*, 93(5), 1499–1521. <https://doi.org/10.1257/000282803322655419>
13. Australian Taxation Office. (2025, August 27). Contributions caps: Contributing more than the caps to your super may mean having to pay extra tax. <https://www.ato.gov.au/tax-rates-and-codes/key-superannuation-rates-and-thresholds/contributions-caps/>
14. Ayuso, J., Jimeno, J. F., & Villanueva, E. (2019). The effects of the introduction of tax incentives on retirement saving. *SERIEs*, 10(3–4), 211–249. <https://doi.org/10.1007/s13209-019-0195-7>
15. Azmi, N. A., Dewi Fitriana, A. R., Rohsede, N. H. A., Ramden, N. A., & Puteh, F. (2023). Tackling the high cost of living in Malaysia: A strategic analysis. *Journal of Administrative Science*, 20(2), 179–206. <https://doi.org/10.24191/jas.v22i1.3763>
16. Becker, J. M., Cheah, J. H., Gholamzade, R., Ringle, C. M., & Sarstedt, M. (2023). PLS-SEM's most wanted guidance. In *International Journal of Contemporary Hospitality Management* (Vol. 35, Issue 1, pp. 321–346). Emerald Publishing. <https://doi.org/10.1108/IJCHM-04-2022-0474>
17. Bongini, P., & Cucinelli, D. (2019). University students and retirement planning: never too early. *International Journal of Bank Marketing*, 37(3), 775–797. <https://doi.org/10.1108/IJBM-03-2018-0066>
18. Canada Revenue Agency (2026). What's new - Savings and pension plan administration. <https://www.canada.ca/en/revenue-agency/services/tax/registered-plans-administrators/whats-new.html>
19. Castanier, C., Deroche, T., & Woodman, T. (2013). Theory of planned behaviour and road violations: The moderating influence of perceived behavioural control. *Transportation Research Part F: Traffic Psychology and Behaviour*, 18, 148–158. <https://doi.org/10.1016/j.trf.2012.12.014>
20. Cheah, J. H., Memon, M. A., Chuah, F., Ting, H., & Ramayah, T. (2018). Assessing reflective models in marketing research: A comparison between pls and plsc estimates. *International Journal of Business and Society*, 19(1), 139–160.
21. Chetty, R., N. Friedman, J., Soren Leth-Petersen, S., Torben Heien Nielsen, T., & Olsen, T. (2013). Subsidies vs. nudges: Which policies increase saving the most? (No. 13–3; Vol. 13, Issue 3).
22. Cheung, Y. L., Mak, B. S. C., Shu, H., & Tan, W. (2023). Impact of financial investment on confidence in a happy future retirement. *International Review of Financial Analysis*, 89. <https://doi.org/10.1016/j.irfa.2023.102784>
23. Chin, W. W. (1998). Issues and opinions on structural equation modeling. *MIS Quarterly: Management Information Systems*, 22(1).
24. Chin, W. W. (2010). Handbook of partial least squares. In *Handbook of Partial Least Squares*. <https://doi.org/10.1007/978-3-540-32827-8>
25. Cifuentes, R. (2005). Tax incentives for retirement savings: simulation results in the presence of liquidity constraints and heterogeneous consumers in an OLG-GE model. In *Series on Central Banking, Analysis, and Economic Policies*.
26. Citci, S. H., & Yanikkaya, H. (2024). The impacts of matching contributions on retirement savings: Evidence from a quasi-natural experiment in Turkey. <https://doi.org/10.2139/ssrn.4104993>
27. Dini Wulandari, T. (2022). The influence of family environment, financial literacy, future perception, and self-control on saving behavior mediated by the intention of high school students in Jepara. *Journal of Economic Education*, 11(1), 12–21. <http://journal.unnes.ac.id/sju/index.php/jeeec>
28. Duckworth, A. L., Milkman, K. L., & Laibson, D. (2018). Beyond willpower: Strategies for reducing failures of self-control. *Psychological Science in the Public Interest. A Journal of the American Psychological Society*, 19(3), 102–129. <https://doi.org/10.1177/1529100618821893>
29. Employees Provident Fund. EPF (2026). Register as a member: Know your benefits. <https://www.kwsp.gov.my/en/member/overview/benefits?>
30. Eren, O., & Genç İleri, Ş. (2022). Life cycle analysis of savings accounts with matching contributions. *Economic Modelling*, 116. <https://doi.org/10.1016/j.econmod.2022.106028>
31. Falk, J., & Karamcheva, N. S. (2022). The impact of an employer match and automatic enrollment on the savings behavior of public-sector workers. *Journal of Pension Economics and Finance*. <https://doi.org/10.1017/S1474747221000366>
32. Ghadwan, A. S., Wan Ahmad, W. M., & Hisham Hanifa, M. (2023). Financial Planning for Retirement: The Moderating Role of Government Policy. *SAGE Open*, 13(2). <https://doi.org/10.1177/21582440231181300>
33. GOV.UK. (2025, April 6). Guidance: Pension schemes rates. <https://www.gov.uk/government/publications/rates-and-allowances-pension-schemes/pension-schemes-rates>
34. Grable, J. E., Joo, S. H., & Kruger, M. (2020). Risk tolerance and household financial behaviour: A test of the reflection effect. *IIMB Management Review*, 32(4), 402–412. <https://doi.org/10.1016/j.iimb.2021.02.001>
35. Hagger, M. S., Cheung, M. W. L., Ajzen, I., & Hamilton, K. (2022). Perceived Behavioral Control Moderating Effects in the Theory of Planned Behavior: A Meta-Analysis. *Health Psychology*. <https://doi.org/10.1037/hea0001153>
36. Hahn, E. D., & Ang, S. H. (2017). From the editors: New directions in the reporting of statistical results in the Journal of World Business. *Journal of World Business*, 52(2), 125–126. <https://doi.org/10.1016/j.jwb.2016.12.003>

37. Hair, Jr., Joseph, F., Hult, G. Tomas. M., Ringle, C. M., Sarstedt, M., Danks, N. P., & Ray, S. (2021). Partial least squares structural equation modeling (PLS-SEM) using R. <https://doi.org/10.1007/978-3-030-80519-7>
38. Hair, J., & Alamer, A. (2022). Partial least squares structural equation modelling (PLS-SEM) in second language and education research: Guidelines using an applied example. *Research Methods in Applied Linguistics*, 1(100027), 181–183. <https://doi.org/10.1016/j.rmal.2022.100027>
39. Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *In European Business Review* (Vol. 31, Issue 1, pp. 2–24). Emerald Group Publishing Ltd. <https://doi.org/10.1108/EBR-11-2018-0203>
40. 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(1), 115–135. <https://doi.org/10.1007/s11747-014-0403-8>
41. Ho, S. S., Goh, T. J., & Chuah, A. S. F. (2022). Perceived behavioral control as a moderator: Scientists' attitude, norms, and willingness to engage the public. *PLoS ONE*, 17(10 October), 1–24. <https://doi.org/10.1371/journal.pone.0275643>
42. Hofstede, G. (2001). Culture's recent consequences: Using dimension scores in theory and research. *International Journal of Cross-Cultural Management*, 1(1), 11–30.
43. Hong, J., She, Y., Wang, S., & Dora, M. (2019). Impact of psychological factors on energy-saving behavior: Moderating role of government subsidy policy. *Journal of Cleaner Production*, 232, 154–162. <https://doi.org/10.1016/j.jclepro.2019.05.321>
44. Inland Revenue Authority of Singapore. (2026). Central Provident Fund (CPF) Relief for employees. <https://www.iras.gov.sg/taxes/individual-income-tax/basics-of-individual-income-tax/tax-reliefs-rebates-and-deductions/tax-reliefs/central-provident-fund%28cpf%29-relief-for-employees?>
45. Internal Revenue Service. (2026). 401(k) limit increases to \$24,500 for 2026, and IRA limit increases to \$7,500. <https://www.irs.gov/newsroom/401k-limit-increases-to-24500-for-2026-ira-limit-increases-to-7500?>
46. Iriani, A. R., Rahayu, C. W. E., & Rahmawati, C. H. T. (2021). The influence of demographic factors and financial literacy on financial behavior. *Jurnal Kajian Manajemen Bisnis*, 10(1), 33. <https://doi.org/10.24036/jkmb.11220500>
47. Isikhan, S. Y., & Zararsiz, G. E. (2022). Imputation-Based Modeling for Outcomes With Ceiling and Floor Effect. *Encyclopedia of Data Science and Machine Learning*, 1041–1055. <https://doi.org/10.4018/978-1-7998-9220-5.ch060>
48. Jaimes, R., & Westerhout, E. (2023). Optimal policies in an ageing society. *Journal of the Economics of Ageing*, 26. <https://doi.org/10.1016/j.jeoa.2023.100475>
49. Knoll, M. A. (2010). The relevance of behavioral economics and JDM in the current savings climate. *Social Security Bulletin*, 70, 1–23. <http://www.socialsecurity.gov/policy>
50. Kozol, E. (2025). A cross-country analysis of determinants of financial literacy: Evidence from 143 countries. *Borsa Istanbul Review*, May. <https://doi.org/10.1016/j.bir.2025.07.009>
51. Kumaraguru, L., & Geetha, C. (2021a). The influence of attitude, subjective norms and perceived behavioral control on retirement preparation: A case of Gen Y in Selangor, Malaysia. *International Journal of Advanced Research in Economics and Finance*, 3(3), 219–238. <http://myjms.mohe.gov.my/index.php/ijaref>
52. Kumaraguru, L., & Geetha, C. (2021b). Predicting retirement preparation based on proactivity, time discounting and the theory of planned behaviour (TPB). *International Journal of Academic Research in Business and Social Sciences*, 11(9). <https://doi.org/10.6007/ijarbs/v11-i9/11237>
53. Kumaraguru, L., Geetha, C., & Mohidin, R. (2022). The factors influencing retirement preparation among gen y in Malaysia. *Advanced International Journal of Banking, Accounting and Finance*, 4(10), 01–12. <https://doi.org/10.35631/aijbaf.410001>
54. La Barbera, F., & Ajzen, I. (2021). Moderating role of perceived behavioral control in the theory of planned behavior: A preregistered study. *Journal of Theoretical Social Psychology*, 5(1), 35–45. <https://doi.org/10.1002/jts5.83>
55. Liao, C., Zhao, D., Zhang, S., & Chen, L. (2018). Determinants and the moderating effect of perceived policy effectiveness on residents' separation intention for rural household solid waste. *International Journal of Environmental Research and Public Health*, 15(4). <https://doi.org/10.3390/ijerph15040726>
56. Lindeboom, M., & Montizaan, R. (2020). Disentangling retirement and savings responses. *Journal of Public Economics*, 192. <https://doi.org/10.1016/j.jpubeco.2020.104297>
57. Lindell, M. K., & Whitney, D. J. (2001). Accounting for common method variance in cross-sectional research designs. *Journal of Applied Psychology*, 86(1), 114–121. <https://doi.org/10.1037/0021-9010.86.1.114>
58. Liu, Z., Yang, J. Z., Clark, S. S., & Shelly, M. A. (2022). Recycling as a planned behavior: the moderating role of perceived behavioral control. *Environment, Development and Sustainability*, 24(9), 11011–11026. <https://doi.org/10.1007/s10668-021-01894-z>
59. Madrian, B. C. (2012). Matching contributions and savings outcomes: A behavioral economics perspective. In *Matching Contributions for Pensions* (pp. 289–309). The World Bank. https://doi.org/10.1596/9780821394922_ch15
60. Madrian, B. C. (2014). Applying insights from behavioral economics to policy design. *In Annual Review of Economics* (Vol. 6, pp. 663–688). <https://doi.org/10.1146/annurev-economics-080213-041033>
61. Magwegwe, F. M., & Lim, H. N. (2021). Factors Associated With the Ownership of Individual Retirement Accounts (IRAs): Applying the Theory of Planned Behavior. *Journal of Financial Counseling and Planning*, 32(1), 116–130. <https://doi.org/10.1891/JFCP-19-00023>

62. Mansor, M. F., Hong, C. C., Abu, N. H., & Shaari, M. S. (2015). Demographic factors associated with retirement planning: A study of employees in Malaysian health sectors. *Asian Social Science*, 11(13), 108–116. <https://doi.org/10.5539/ass.v11n13p108>
63. Miller, B. K., & Simmering, M. J. (2023). Attitude Toward the Color Blue: An Ideal Marker Variable. *Organisational Research Methods*, 26(3), 409–440. <https://doi.org/10.1177/10944281221075361>
64. Mohamed Abdul Kadir, J., Shoukat, A., Naghavi, N., & Jamaluddin, A. A. (2021). Saving behavior in an emerging country: The role of financial knowledge, peer influence and parent socialisation. *Pakistan Business Review*, 22(4), 629–644. <https://doi.org/10.24191/gading.v23i01.210>
65. Mohd Ishak, Z., Magli, S., & Sabri, M. F. (2022). Predictors of retirement security among the Malaysian civil servants. *International Journal of Academic Research in Business and Social Sciences*, 12(12), 1983–2003. <https://doi.org/10.6007/IJARBS/v12-i12/16002>
66. New Zealand Legislation. (2026). Taxation (Budget Measures) Bill (No 2). <https://www.legislation.govt.nz/bill/government/2025/0157/latest/d464208e2.html?>
67. Ningrum, A. U., & Setiyawati, H. (2022). Tax Compliance Analysis Moderated With Trust in Government. *International Journal of Engineering Research and Management (IJERM)*, 9(4), 21–27. www.ijerm.com
68. Podsakoff, P. M., Podsakoff, N. P., Williams, L. J., Huang, C., & Yang, J. (2024). *Annual Review of Organizational Psychology and Organizational Behavior*, 26, 16. <https://doi.org/10.1146/annurev-orgpsych-110721>
69. Poh, L. M., Sabri, M. F., Abdul Rahim, H., & Wijekoon, R. (2021). Determinants of financial vulnerability among civil servants in Peninsular Malaysia. *Malaysian Journal of Consumer and Family Economics*, 27, 113–143.
70. Prasetyo, B. S., Yulianto, A., & Setyadharma, A. (2020). The influence of financial literacy and parents' income on saving behavior based on parents' education and school status. *Journal of Economic Education*, 10(1), 14–20. <https://doi.org/10.15294/jeec.v9i2.40662>
71. Raut, R. K., Das, N., & Kumar, R. (2018). Extending the Theory of Planned Behaviour: Impact of Past Behavioural Biases on the Investment Decision of Indian Investors. In *Asian Journal of Business and Accounting* (Vol. 11, Issue 1).
72. Satsios, N., & Hadjidakis, S. (2018). Applying the Theory of Planned Behaviour (TPB) in saving behaviour of Pomak households. *International Journal of Financial Research*, 9(2), 122–133. <https://doi.org/10.5430/ijfr.v9n2p122>
73. Shabor Rameli, R., & Marimuthu, M. (2018). A Conceptual Review on the Effect of Attitudes towards Retirement on Saving Intentions and Retirement Planning Behavior. *SHS Web of Conferences*, 56, 02005. <https://doi.org/10.1051/shsconf/20185602005>
74. Shariff, N. S. M., & Ishak, W. W. M. (2021). Statistical analyses on factors affecting retirement savings decisions in Malaysia. *Mathematics and Statistics*, 9(3), 243–248. <https://doi.org/10.13189/ms.2021.090305>
75. She, L., Rasiah, R., Weissmann, M. A., & Kaur, H. (2024). Using the Theory of Planned Behaviour to Explore Predictors of Financial Behaviour Among Working Adults in Malaysia. In *FIIB Business Review* (Vol. 13, Issue 1, pp. 118–135). <https://doi.org/10.1177/23197145231169336>
76. Šimkovic, M., & Träuble, B. (2019). Robustness of statistical methods when the measure is affected by the ceiling and/or floor effect. *PLoS ONE* (Vol. 14, Issue 8). <https://doi.org/10.1371/journal.pone.0220889>
77. 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 and Society*, 42(12), 2940–2967. <https://doi.org/10.1017/S0144686X21000337>
78. Sullivan, G. M., & Feinn, R. (2012). Using effect size—or why the p value is not enough. *Journal of Graduate Medical Education*, 4(3), 279–282. <https://doi.org/10.4300/jgme-d-12-00156.1>
79. Tan, S., & Singaravelloo, K. (2020). Financial literacy and retirement planning among government officers in Malaysia. *International Journal of Public Administration*, 43(6), 486–498. <https://doi.org/10.1080/01900692.2019.1672078>
80. Thaler, R. H., & Benartzi, S. (2004). Save more tomorrow: Using behavioral economics to increase employee saving. *Journal of Political Economy*, 112(1), 164–187. <https://doi.org/10.1086/380085>
81. Tomar, S., Kent Baker, H., Kumar, S., & Hoffmann, A. O. I. (2021). Psychological determinants of retirement financial planning behavior. *Journal of Business Research*, 133, 432–449. <https://doi.org/10.1016/j.jbusres.2021.05.007>
82. Ugwu, L. E., & Idemudia, E. S. (2023). Retirement planning and financial anxiety among Nigerian civil servants: Insights from social comparison theory. *Behavioral Sciences*, 13(5). <https://doi.org/10.3390/bs13050425>
83. Wahab, M. S. S., Abd. Karim, M. R., & Lim, T. S. (2022). Financial literacy and behavioural disposition in retirement saving – A study on employees' preparedness for a fully defined contribution pension scheme in Malaysia. *Kasetsart Journal of Social Sciences*, 43(3), 619–628. <https://so04.tci-thaijo.org/index.php/kjss/article/view/260322>
84. Xu, L., Qian, X., & Ling, M. (2025). Moderating the influence of social norms on climate change mitigation behavior: The roles of environmental beliefs, government quality, and policy incentives. *Environmental Impact Assessment Review*, 114(March). <https://doi.org/10.1016/j.eiar.2025.107901>
85. Yeo, K. H. K., Lim, W. M., & Yii, K. J. (2023). Financial planning behaviour: a systematic literature review and new theory development. *Journal of Financial Services Marketing*. <https://doi.org/10.1057/s41264-023-00249-1>
86. Yusof, R., Sabri, M. F., Rahim, H. A., & Jusoh, Z. M. (2018). Examining the behavioural intention to save in a voluntary retirement fund in Malaysia. *Malaysian Journal of Consumer and Family Economics*, 21(December), 78–100.
87. Zhang, S. (2023). Policy expectation counts? The impact of China's delayed retirement announcement on urban households' savings rates. <https://www.bbc.com/zhongwen/simp/chinese-news-64648455>