Journal of Business and Social Development *eISSN: 2600-9668*
Volume 12 Number 2, September 2024: 36-48

DETERMINANTS OF HOUSEHOLD OVER-INDEBTEDNESS AND FINANCIAL FRAGILITY: AN EMPIRICAL STUDY OF MALAYSIAN CIVIL SERVANTS

AMIEN ARIEF JAMALUDDIN, ROZA HAZLI ZAKARIA AND NURULHUDA MOHD SATAR

Faculty of Business and Economics, Universiti Malaya, 50603 Kuala Lumpur, Malaysia.

**Corresponding author: amien@siswa.um.edu.my*
http://doi.org/10.46754/jbsd.2024.09.003
Received: 15 May 2024 *Accepted: 30 June 2024* *Published: 15 September 2024*

Abstract: The significant increase in household debt over the past decade poses a considerable concern for household financial position. Household over-borrowing reduces consumption and standard of living and increases household exposure to financial vulnerability. This micro-level study aims to investigate the probability of households being over-indebted and financially fragile by examining socio-economic characteristics, focusing on age, income, debt, number of dependents, and materialistic values. By employing binary and ordered logistic regression analyses, this study examines the probability of Malaysian civil servants being over-indebted and financially fragile due to their larger total debt accumulation compared to the Malaysian average. Findings reveal that nearly seven out of 10 Malaysian civil servants are over-indebted, while almost three out of 10 are financially fragile. While the study identifies a moderate level of financially fragile households, about 47% of non-financially fragile households still encounter some form of financial constraint. Despite this, an analysis of household-perceived financial condition indicates that 65.1% are financially sound. Apart from the household age, income, debt, and number of dependents, the study indicates that household materialistic orientation plays a central role in determining the household's financial position.

Keywords: Households, over-indebtedness, financial fragility, Malaysian civil servants.

Introduction

The sustainable level of household debt not only supports consumption smoothing to improve the standard of living but also contributes to overall economic growth. According to Lombardi *et al*. (2017), a rise in household borrowing in the short term boosts consumption, which subsequently contributes to gross domestic product (GDP) growth. The importance of debt as a means of consumption is evidenced by the significant increase in Malaysian Household debt-to-GDP ratio from 60% in 2008 to 89% in 2021. According to the Bank Negara Malaysia (BNM), the total Malaysian household debt is recorded at RM1.4 trillion in 2021 (BNM, 2022). However, the substantial amount of debt raises concerns regarding borrowing purposes as well as the probability of using debt to finance materialistic expenditures, potentially leading households to live beyond their means.

In the Malaysian public sector context, civil servants enjoy wider access to credit from banks and non-bank financial institutions than self-employed and private sector employees. With relatively stable income and secured employment, lending to government employees involves lesser risk for non-performing loans, thus allowing financial institutions to offer targeted loans at much lower interest rates. The implementation of the automated salary deduction system to facilitate personal borrowing and enhance the efficiency of lending and borrowing activities may contribute to an increase in demand for loans.

High debt service not only affects consumption but also reduces a household's ability to accumulate adequate financial liquidity for unexpected expenses. According to the Governor of Bank Negara Malaysia, nearly five out of 10 Malaysians are unable to raise a minimum of RM1,000.00 immediately in the event of an emergency, and lower-income households with higher levels of borrowing are financially vulnerable (AKPK, 2022). Additionally, Aziz *et al*. (2018) suggest that borrowers with an income below RM5,000.00 or spending more than 60% of their income to finance debt instalments are more likely to record a negative financial margin, which may increase the probability of financial vulnerability and default.

On the other hand, the lower income group among public employees is found to be the most financially vulnerable. Studies show that Malaysian civil servants with an income of less than RM5,000.00 are left with only 15% of their income for other expenses and savings after deducting the cost of debt repayment and expenditure on essential items (Aziz *et al*., 2018). With relatively higher borrowing and low savings, these households are financially unsecured against economic and financial shocks. Apart from the financial risk of not having sufficient savings, being financially vulnerable may contribute to other adverse consequences, such as financial distress as well as psychological and physical pressure, which directly impact individual productivity at the workplace (O'Neill *et al*., 2006; Rahim *et al.*, 2018)

Based on the available literature, the extent of household financial position is largely determined by demographic, financial, and household behavioural factors. This study further analyses if similar predictors contribute to household over-indebtedness and financial fragility with a specific focus on household life cycle, level of income as well as materialistic orientation. We also take into consideration the possibility that household attachment to material possessions might play an important role in examining household spending and financial management and debt accumulation (Gardarsdottir & Dittmar, 2012; Trzcinska & Sekscinska, 2020; Lucic *et al*., 2020; Maison & Adamczyk, 2020; Waqqas & Siddiqui, 2021). Recent studies on the influence of religious belief and psychological factors among Malaysian civil servants found that aggressive borrowing through personal loans and credit card usage is significantly determined by households with higher materialistic levels (Mahdzan *et al*., 2023).

Literature Review

Debt enables households to enhance their standard of living and overall well-being by smoothing consumption based on lifetime income projections. Typically, it is impractical for households to fund large purchases using only current income. This includes housing, vehicles, appliances, education, and insurance. These purchases often require borrowing, necessitating significant debt repayments. Modigliani and Brumberg's (1954) Life Cycle Hypothesis explains how rational households manage spending, saving, and debt across their lifetime to achieve maximum utility. In early life, households often consume more than their income, leading to dissaving or borrowing to finance consumption. As income increases and surpasses expenditures, households begin saving and repaying debt. In the final life phase, households live off savings accumulated during earlier years. While over-indebtedness harms both household financial conditions and the broader economy, moderate debt levels help households improve their living standards by smoothing consumption in response to income variations, promoting efficient resource allocation.

Empirical studies from various countries have identified common factors contributing to rising household debt, including high GDP, robust economic growth, financial market deregulation, and rising property prices. National output is closely linked to debt levels, predicting increases in both secured mortgage debt and unsecured consumer debt (Nizar, 2015). In Korea, Kim *et al*. (2014) found that robust macroeconomic conditions, rising property prices, financial deregulation, and demographic changes have driven rapid debt increases. Expanding credit access and rising incomes have also led to higher borrowing. Debt distribution analysis shows that the increase in household debt stems from new borrowers, suggesting sustainable debt levels. Additionally, Meng *et al*. (2013) argued that favourable macroeconomic conditions significantly impact household borrowing. Strong economic growth, low interest rates, low unemployment, and low inflation foster optimistic future growth expectations, resulting in higher lending and borrowing. Apart from that, demographic changes, such as population growth and more first-time borrowers, also drive increased borrowing.

Demand-side analyses suggest that household financial status, demographics, and consumption behaviour predict household debt levels. According to the Life Cycle Hypothesis, age influences consumption and financial patterns, with younger households borrowing more due to insufficient income and older households borrowing less as income and savings increase (Margi, 2002). Life expectancy also correlates with debt, with ambiguous implications. Here, longer life expectancy could mean higher debt due to extended repayment periods or lower debt as older individuals demand less credit (Coletta *et al*., 2019). On the other hand, household income and wealth significantly determine debt levels, with higher debt in wealthier countries due to increased borrowing and credit access (Coletta *et al*., 2019). Both low- and high-income households contribute to overall borrowing, with affluent households borrowing larger amounts and lower-income households more likely to face debt problems (Adzis *et al*., 2017). Lower socio-economic households often borrow to finance basic needs, leading to serious debt issues (Lea *et al*., 1993). Psychological factors, such as conspicuous consumption and materialistic values, also influence household debt. Social comparison and attitudes towards debt significantly impact borrowing levels (Zakaria *et al*., 2017). Moreover, low self-control and compulsive buying are associated with higher debt levels (Achtziger *et al*., 2015).

Conflicting findings on debt levels among Italian households led Anderloni *et al*. (2012) to investigate household borrowing's impact on financial vulnerability. They found that debt instalments, especially unsecured debt, correlate with financial vulnerability. Impulsive consumers are more financially vulnerable, while higher education levels correlate with lower financial fragility. However, Loke (2016) found that higher education does not necessarily lead to sound financial management. Factors such as age, cognitive ability, education, and ethnicity also affect financial fragility (Lusardi *et al*., 2011; Emmons & Noeth, 2013). In Malaysia, Yusof *et al*. (2015) found that urban households are financially vulnerable, with many unable to withstand income shocks. Factors like education, income, wealth, ethnicity, gender, and household size determine financial survival.

Materialism significantly impacts well-being and financial behaviour. High materialistic values correlate with lower life satisfaction and well-being (Belk, 1984; Richins & Dawson, 1992). Materialism leads to excessive spending, higher borrowing, financial worries, poor money management, and compulsive buying (Watson, 2003; Garðarsdóttir & Dittmar, 2012). To reduce materialism, interventions focus on shifting from extrinsic to intrinsic values, mindfulness, and gratitude. Restricting children's exposure to advertisements also helps reduce materialistic tendencies (Kasser, 1996). In summary, household debt and financial fragility are influenced by macroeconomic conditions, financial and demographic factors as well as psychological constructs and values. Properly managed debt enhances living standards, while excessive debt leads to financial fragility and lower well-being.

Conceptual Framework

Based on the literature concerning the life-cycle assumptions and materialistic values, factors such as household life cycle, income level, debt, and materialistic orientation are crucial in determining household indebtedness (Rahman *et al*., 2020). Consequently, this study hypothesises that these predictors may directly influence household over-indebtedness and financial fragility. Additionally, previous studies have associated demographic variables with the extent of household indebtedness and financial fragility (Karambakuwa & Ncwadi, 2021; Piovarci, 2021; Poh *et al*., 2021; Cziriak, 2022). Demographic variables such as gender, marital status, number of dependents, and education level are included in the framework for examining household over-indebtedness (Figure 1) and financial fragility (Figure 2). The construction of these two different frameworks allows this study to examine the similarities and differences in the significance levels of all predictors in determining household over-indebtedness and financial fragility.

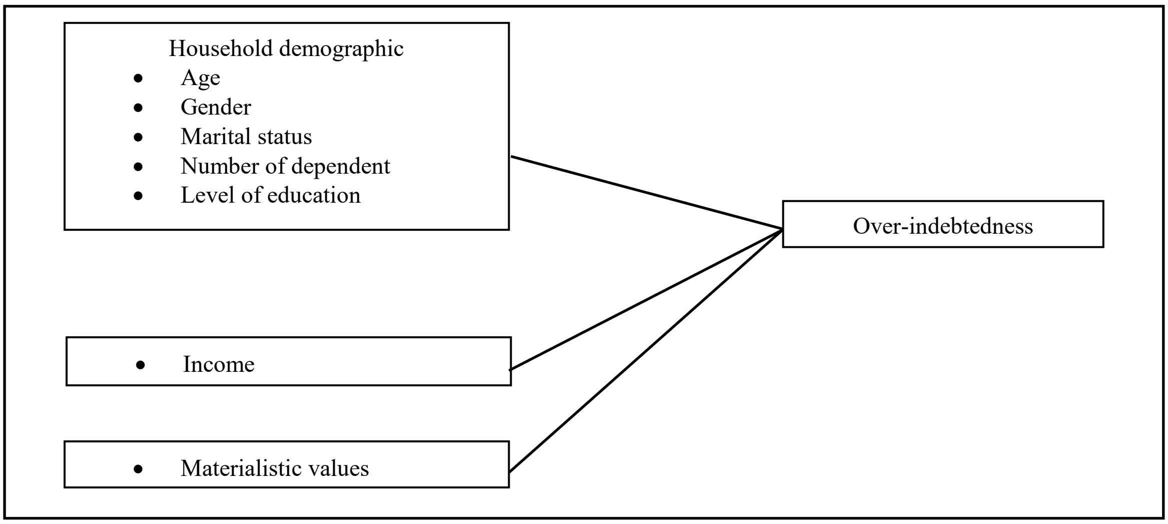

Figure 1: Conceptual framework of household over-indebtedness

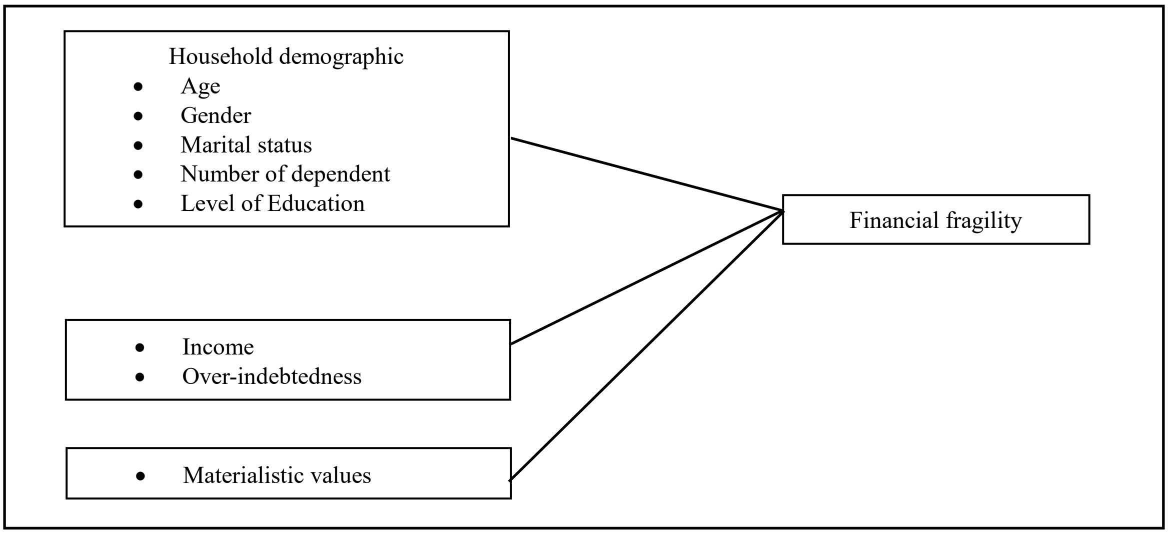

Figure 2: Conceptual framework of household financial fragility

Methods

Data Collection and Sampling Procedure

This study focuses on households among civil servants as its population sample due to the higher levels of debt services compared to the Malaysian average in 2018. Data collection was conducted at selected ministries and government departments in Putrajaya. As of July 2018, the total population of civil servants in Putrajaya was 61,217, including government officials from various grades and schemes.

Accessing respondents from federal government offices ensured a balanced representation between lower and managerial groups, reflecting the typical structure of government departments more accurately than state and other government agencies in different regions. Additionally, focusing on a specific urban locality allows the study to reduce uncontrolled bias and variability in household expenses, financial conditions, and consumption patterns that could arise from the large differences in the cost of living and lifestyle between rural and urban areas. The availability of primary data enabled this study to compute and analyse household-level financial data, which is crucial for examining the actual financial positions of households.

We utilise a multistage sampling procedure, in which the first stage involves selecting ministries with the highest number of employees. In the second stage, respondents were randomly selected among officers from grades 11 to 54 from departments within these ministries. This procedure enabled the study to capture relevant data from targeted respondents, including lower and middle-income households. Data collection occurred from October to December 2018 where 700 questionnaires were distributed, with a response rate of 73% (511 responses). A total of 392 completed and reliable responses were used for analysis. Several studies have utilised similar sampling sizes to analyse employee job productivity, financial distress, and the probability of bankruptcy among Malaysian civil servants (Idris *et al*., 2013; Nair *et al*., 2016; Rahim *et al*., 2020).

Variable Description and Measurement

The debt service amount is defined as the household's total monthly debt repayment to a financial institution or credit provider that includes loans for housing, vehicle, education, personal, credit card as well as easy payment purchases. Household with more than 30% Debt Service Ratio (DSR) is categorised as over-indebted. A similar threshold was utilised by banking institutions as well as household finance studies both locally and internationally (D'Alessio & Iezzi, 2013; Michelangeli & Pietrunti, 2014; Nizar, 2015; Michelangeli & Rampazzi, 2016; Loke, 2017; Zakaria *et al*., 2017). For the first regression analysis purposes, the continuous variable is transformed into a binary variable, where a household with a low debt level is coded as 0 and an over-indebted level as 1.

Household financial fragility is assessed through both qualitative and quantitative measures. The initial subjective assessment requires respondents to evaluate their monthly financial position by indicating whether their household income is sufficient to get to the end of the month. Responses range from (1) very easily, where savings are possible, to (5) with great difficulty, where borrowing is necessary. Respondents facing financial difficulty are categorised as financially fragile households. The subsequent objective inquiry gauges a household's capacity to come up with RM10,000.00 as a financial buffer against financial shocks. The benchmark equates to one and a half months of the Malaysian average income in 2016. This binary question defines a 'yes' as financially sound and a 'no' as financially fragile.

In addition, this study adopted Richins and Dawson's (1992) Materialistic Value Scale (MVS) instrument to measure respondents' level of materialistic orientation. Respondents were asked to indicate their level of agreement or disagreement with statements on a scale ranging from one (strongly disagree) to five (strongly agree). The total score ranges from 18 to 90, with a score of 18 indicating a low materialistic value and a score of 90 indicating a high materialistic value. These levels of materialistic value are further categorised as low, moderate, and high.

Table 1: Variable description

Variables	Description
Over-indebtedness	Debt service ratio level Less than 30% (Low debt level) = 0 More than 30% (Over-indebted) = 1 Binary variable
Financial fragility	Household ability to come up with RM10,000.00 Yes (Financially sound) = 0 No (Financially fragile) = 1 Binary variable
Income	Household total income per month Categorical variable
Age	Respondent age in years Categorical variable
Gender	Female = 0 Male = 1 Binary variable
Marital status	Not married or divorced = 0 Married = 1 Binary variable
Dependents	Number of dependents, including unemployed spouses Continuous variable
Education	Respondent's highest level of education Secondary education = 0 Higher education = 1 Binary variable
Materialistic	Respondent materialistic value Materialistic value scale (18 items) Continuous variable

Estimation Model

This study utilises a binary logistic regression model to examine the impact of demographic, financial, and consumption value predictors on household financial fragility and over-indebtedness. In contrast to multivariate analysis, logistic regression allows for the analysis of relationships between a binary dependent variable and multiple independent variables of various measurement types. Drawing from both theoretical and empirical literature, the econometric model constructed for this analysis includes one dependent variable and eight predictors. The binary logistic regression model is formulated as follows:

$$\log[P/(1-P)]fragility = a + \beta_{1_{age}} + \beta_{2_{gender}} + \beta_{3_{marital\_stat}} + \beta_{4_{num\_dependent}} + \beta_{5_{edu\_level}} + \beta_{6_{income}} + \beta_{7_{over\_indebted}} + \beta_{8_{mat\_value}} + \varepsilon \quad (1)$$

Based on Equation 1, P/1-P fragility represents household financial fragility as a binary dependent variable. Here, P refers to the probability of being financially fragile (coded as 1), while 1-P represents the probability of not being fragile (coded as 0). The logarithmic function estimates the log odds of a household being financially fragile based on respondents' feedback on their ability to come up with RM10,000.00. The explanatory variables include a mix of binary, continuous, categorical, and scale responses. Variables such as gender, marital status, education, and over-indebtedness are recoded as binary variables: Male/female, single/married, low/high education attainment, and low/high debt level, respectively. The number of dependents, defined as the total number of family members, including unemployed, financially dependent spouses, and the total amount of monthly household savings, are treated as continuous variables. Total household income and respondent age are categorised, with income recoded as low, middle, and high income, while age is grouped into life stages: Below 30, 31-40, 41-50, and 51 and above. Materialistic values are measured on a scale variable, resulting in a total score ranging from 18 to 90. The second empirical model specification for the household probability of being over-indebted is as follows:

$$\log[P/(1-P)]over\_indebted = a + \beta_{1_{age}} + \beta_{2_{gender}} + \beta_{3_{marital\_stat}} + \beta_{4_{num\_dependent}} + \beta_{5_{edu\_level}} + \beta_{6_{income}} + \beta_{7_{mat\_value}} + \varepsilon \quad (2)$$

According to Equation 2, the regression estimates the probability of household over-indebtedness, with the over-indebted represented by 1, and households with a lower debt level represented by (1-P). The set of independent variables includes demographic, financial, and consumption value predictors similar to those used in the regression analysis of financial fragility.

Results

Table 2 describes the socio-demographic data of 392 respondents, representing 54.6% supporting staff and 45.4% middle managers. The average respondent age is 36, with nearly 80% falling in the middle-aged adult range (30-45 years old), followed by 11.2% in the elderly category (45-59 years old) and 9.2% as young adults (below 30 years old). The majority of respondents (73.0%) are female, and 27.0% are male. Additionally, 73.4% of respondents are married, while 26.6% are single, including unmarried and divorced respondents. The average number of dependents is two, with nearly half of the respondents having one to three dependents, 20.4% with four to eight dependents, and 31.1% having none. Furthermore, 83.4% of respondents hold tertiary education, while 16.6% have completed secondary education.

Table 2: Socio-demographic descriptions (N = 392)

		Frequency	**Percentages (%)**
Age	Below 30 years old	36	9.2
	30-45 years old	312	79.6
	Above 45 years old	44	11.2
Gender	Male	106	27.0
	Female	286	73.0
Marital status	Not married/separated	104	26.6
	Married	288	73.4
Number of dependent	None	122	31.1
	1-3	190	48.5
	4-8	80	20.4
Level of education	Secondary education	65	16.6
	Tertiary education	327	83.4
Occupational level	Supporting group	214	54.6
	Managerial group	178	45.4

Descriptive Findings

Total Income

The average total monthly household income for the entire sample is RM6,947.00, with a median of RM6,050.00. Additionally, nearly 40% of households receive supplementary income from various sources such as overtime pay, rental income, business profits, investments, and cash transfers. In terms of total income, the findings reveal that the majority (49.7%) of households fall into the middle-income bracket, earning between RM4,360.00 and

RM9,619.00 monthly, 29.1% are categorised as lower-income households, with an income of RM4,360.00 or below. In comparison, 21.2% belong to the high-income category, earning RM9,619.00 or more monthly. These income classifications are based on the Malaysian Household Income Survey 2016 by the Malaysian Statistics Department.

Over-indebtedness

The finding shows that the median household total debt for civil servants is about RM2,500.00 a month. This includes home and motor vehicle financing, education and personal loans, easy payment schemes as well as a credit card. The estimation of DSR shows that nearly seven out of 10 households are over-indebted. The civil servant households, on average, spend almost 40% of their monthly income to finance debt instalments, with one out of 5 households using more than half of their income for debt repayment. Further investigation on the extent of debt level based on income category indicates that the lower-income household recorded higher DSR at 43% compared to the middle- and higher-income household with 39% and 35%, respectively.

Financial Fragility

Household financial fragility was assessed by examining their capacity to generate RM10,000.00 as a financial buffer for unforeseen expenses. Approximately 27.3% of households found it easy to raise this amount, while 47.0% reported being able to meet the expense but with varying degrees of difficulty. Financially fragile households, constituting 25% of the total sample, were unprepared for such emergencies due to insufficient savings or liquidity. Analysis revealed that lower-income households were the most financially vulnerable. Despite 15.8% of households being financially secure, findings suggest that up to 40% were ill-prepared for an immediate RM10,000.00 expense, with 42% finding it challenging to meet the threshold. Middle-income households exhibited similar fragility, with 25% unable to access the necessary funds. Nearly half reported being able to meet the amount but with difficulty. However, there was a slightly higher proportion of households able to cover the expense comfortably. Among high-income households, almost 50% were prepared for financial shocks, with only 4.8% categorised as financially fragile.

Materialistic Values

Based on the estimation results, the total sample size indicates a mean MVS score of 48.9, with a range from 22 to 73. This suggests a moderate level of materialistic values among Malaysian civil servants. Further analysis by household income category reveals that the mean MVS score for lower-income households is higher at 50.2 compared to middle-income and upper-income households, which are recorded at 49.25 and 46.67, respectively. The original 18-item scale is widely adopted for examining correlations with borrowing due to its conceptual relevance and scale reliability. The reliability of the scale, assessed using the Cronbach Alpha test for this study, is recorded at 0.78.

Logistic and Ordered Regression Estimation

Both models for predicting household probability of over-indebtedness and financial fragility show statistical significance. Firstly, the Omnibus test of model coefficients indicates that the over-indebtedness model, with its proposed predictors, is statistically significant at .002 ($p < 0.05$). This test, assessing overall model strength, yielded a highly significant value, with a chi-square value of 27.620 and five degrees of freedom. Additionally, the Hosmer and Lemeshow goodness of fit test also supports the model's robustness, with a significant value of .260 and a chi-square value of 10.071. These results confirm the model's predictive capability, explaining between 15.5% and 22.8% of variance, with 76.5% correct classification of over-indebtedness.

The second logistic regression analysis determines the household probability of financial fragility, defined by the ability to amass RM10,000.00 as an emergency fund. The model is statistically significant, with an Omnibus test of model coefficients result of .000 ($p < 0.05$) and a chi-square value of 67.96 with five degrees of freedom. The Hosmer and Lemeshow test further confirms the model's robustness, with a significant value of 0.665 and a chi-square value of 5.845. These findings demonstrate the model's strong predictive ability in distinguishing between financially fragile and financially sound households. Moreover, the model explains between 15.9% and 23.4% of variance, with 76.5% correct classification of financial fragility.

Based on Table 3, at a significance level of five percent, the household life cycle inadequately explains the relationship between respondent age and household over-indebtedness. Nonetheless, the findings suggest that youth increases the likelihood of household financial fragility by fivefold compared to older respondents. Moreover, being female or single doubles the odds of over-indebtedness and increases it by 46%, respectively. Household size, specifically the number of dependents, significantly predicts financial fragility, with each additional dependent increasing the likelihood by 1.2 times.

Furthermore, total household income emerges as a key indicator for analysing both over-indebtedness and financial fragility. Lower-income households are 2.3 times more likely to be over-indebted and 16.2 times more likely to be financially fragile compared to higher-income households. Similarly, middle-income households have a 6.1 times higher likelihood of financial fragility. Conversely, over-indebted households are twice as likely to be financially fragile compared to those with low debt levels. The results also confirm that households with higher levels of materialistic values are nearly twice as likely to be financially fragile compared to those with lower materialistic values.

This study further explores the household probability of experiencing financial fragility by employing ordered logistic regression analyses based on the ordered categorical responses obtained from the respondents. The aim is to assess the consistency and robustness of the binary estimation and findings regarding household financial fragility. The categorical responses gauge the household's ability to come up with RM10,000.00 and are coded as follows: 1 (very easy), 2 (easy), 3 (with some difficulty), 4 (with great difficulty), and 5 (unable). These findings generally support the results of the binary logistic estimation conducted to analyse determinants of household financial fragility. Many of the statistically significant predictors identified in the binary estimation, such as respondent age, number of dependents, household income category, level of debt, and respondent materialistic values, also emerge as significant factors in explaining various levels of household financial position. The only difference observed between both estimations, however, relates to the significance of the respondent's level of education variable.

Table 3: Regression on probability of household over-indebtedness and financial fragility

	Over-indebtedness			**Financial Fragility**		
	B	**Sig.**	**OR**	**B**	**Sig.**	**OR**
Age (ref above 45)		.001			.014	
Age below 30 years old	−.787	.125	.455	1.622	.007	5.065
Age 30-45 years old	.556	.119	1.743	.520	.270	1.683
Female	.691	.014	1.996	.094	.739	1.099
Single	−.775	.032	.461	−.325	.405	.722
Number of dependent		.652		.186	.035	1.205
1-3	.207	.607	1.230			
4-8	−.088	.778	.915			
Low level of education	−.215	.520	.806	.318	.347	1.374
Income class		.095			.000	
Low income	.849	.038	2.337	2.784	.000	16.187
Middle income	.539	.073	1.714	1.810	.001	6.111
Over-indebtedness				.695	.022	2.004
Materialistic value	−.072	.767	.931	.608	.033	1.838
Constant	.217	.761	1.243	−6.135	.000	.002

Discussions

The results indicate that there is no statistical evidence to correlate age with the probability of households being over-indebted. However, it was found that younger households are 5 times more likely to be financially fragile compared to older age cohorts. This finding may reflect the assumptions of the Life Cycle Hypothesis, wherein households at a younger age, receiving entry-level incomes, allocate more funds to household needs to establish themselves in early adulthood. Significant spending and debt commitments at a young age may affect household financial liquidity, contributing to financial fragility. In analysing financial vulnerability among Malaysian working adults, Loke (2017) suggests that households in the early stages of their working lives are financially constrained due to low income, increasing consumption, and debt levels. Additionally, they may finance their consumption through borrowing. Similar consumption and debt patterns among younger households are also observed in many parts of the region. It is suggested that younger households in most EU countries, particularly Greece, Spain, France, Germany, and Portugal, are more likely to face financial pressure than older and more established household categories (Fasianos *et al.*, 2014).

Conversely, the insignificant correlation between younger age and household over-indebtedness implies that while younger households may increase their borrowing for consumption purposes, they are less likely to engage in over-borrowing due to lower borrowing eligibility determined by household income levels. In the case of Malaysian civil servants, households in the middle and older age brackets, typically represented by senior-level officers, possess higher borrowing eligibility due to their elevated income levels compared to younger officers.

The findings also indicate that an additional dependent increases the probability of household financial fragility by 1.2 times. It is suggested that an increase in the number of dependents contributes to higher household expenses related to food, education, transportation, communication, childcare, and leisure. Furthermore, the escalating cost of living, particularly in urban areas, has led households to increase spending to maintain their standard of living, thereby further reducing their ability to save. This finding is consistent with Šubová *et al.* (2021) examination of the determinants of household financial vulnerability among households in the eurozone countries. The study found a positive correlation between the number of children dependent on the household head and financial vulnerability. It is suggested that households with more dependent children will likely experience increased financial vulnerability, as they need to allocate more financial resources to children's expenses and may resort to borrowing to support their education.

However, among Malaysian civil servants, the number of dependents shows no significant variation when analysing the likelihood of households becoming over-indebted. This may suggest that over-borrowing for major purchases like property and vehicles, as well as the use of personal financing, is not influenced by the size of the household's dependents.

Household income stands out as the key predictor in assessing the extent of household over-indebtedness and financial fragility. Being in the lower income category increases the likelihood of being over-indebted and financially fragile by 2.3 times and 16.2 times, respectively. Descriptive analysis suggests that lower-income households, on average, allocate a larger portion of their income to debt repayment than middle- and high-income households. This combination of low income and high borrowing further clarifies the heightened vulnerability of these households, as they have fewer financial resources available for saving purposes.

Other studies have yielded varying results, depending on the context of the research. Several studies, based on empirical findings, argue that higher income leads to increased borrowing (Haq *et al*., 2018; Mutsonziwa & Fanta, 2019). Middle-income and high-income households, characterised by higher earnings and better financial positions, are capable of meeting larger instalment obligations. These findings suggest that middle- to higher-income households have greater access to credit and financing facilities. Other findings indicate a negative relationship between the level of income and the amount of household borrowing (Chichaibelu & Waibel, 2018; Wałęga & Wałęga, 2021).

The results also indicate that over-borrowing increases the likelihood of households experiencing financial vulnerability by twofold compared to those with lower borrowing levels. This finding aligns with a study that utilised debt-to-income ratio measures to analyse household debt among Indonesian households, which found a positive correlation between household debt levels and financial vulnerability (Noerhidajati *et al*., 2021). Consequently, these findings may suggest households' inability to allocate a significant portion of their income to unforeseen expenses or financial reserves, particularly among lower and middle-income households. In examining the financial position of Malaysian civil servants, Aziz *et al*. (2018) indicated that households earning less than RM5,000.00 allocate only 15% of their income to discretionary expenses after deducting debt repayment and essential expenditures.

In addition to household demographics and financial position, the findings underscore the significance of household attachment to material possessions in determining financial fragility. The results indicate that households with a high materialistic orientation are twice as likely to experience financial fragility compared to those with less emphasis on material possessions. On the other hand, there is no statistical evidence to establish a correlation between materialistic orientation and the probability of households being over-indebted. This suggests a propensity for households with strong materialistic values to persistently engage in cash spending, including using savings, thereby diminishing their overall saving capacity. Such purchases may also include constant spending on high-value items and services such as food and beverages, apparel, footwear, accessories, gadgets, electronic products, personal care items, and hobbies driven by materialistic values. This finding adds to the existing literature that suggests a significant association between household materialistic orientation and spending and savings (Watson, 2003; Pangestu & Karnadi, 2020).

Finally, descriptive analyses reveal that approximately 40% of financially fragile households perceive themselves to be financially well-off and claim to have the ability to save every month. This suggests a significant disparity between perceived and actual financial positions. Two possibilities may account for this situation. Firstly, a stable household income and long-term pension security provided during retirement may contribute to the perception of financial well-being. Incremental increases in income each year may also alleviate the financial burden on households, enabling them to manage additional expenses and debt payments more effectively. Secondly, this phenomenon may indicate that households consistently tap into their savings to finance expenditures. Although households assert their ability to save a minimum to a substantial amount each month, these savings may be regularly utilised to cover additional and unexpected expenses. The continual depletion of savings to sustain their standard of living may diminish financial liquidity and reduce the household's capacity to withstand economic and financial shocks.

Conclusions

This study reveals the state of household over-indebtedness and financial fragility among Malaysian civil servants, particularly among those in the lower- and middle-income categories. While nearly seven out of 10 respondents are found to be over-indebted, more than 50% perceive themselves to be financially secure based on their ability to save. This suggests that households are able to save despite allocating a significant portion of their income to finance debt repayments each month. However, an analysis of household financial fragility indicates a significant gap between perceived financial well-being and actual financial vulnerability, with approximately 40% of financially fragile households perceiving themselves as financially secure.

In the context of Malaysian civil servants, household age, income level, debt burden, gender, marital status, number of dependents, and materialistic values are evident as pivotal factors in determining household financial position, particularly regarding over-indebtedness and financial fragility. Based on these findings, we propose revisions to the remuneration scheme, particularly concerning housing and living allowances for Malaysian civil servant households residing in urban areas. These revisions should align with the current cost of living and the expenses associated with homeownership, considering existing salary thresholds. Furthermore, on the supply side of borrowing, the government may consider implementing stricter regulations on unsecured loans, such as personal and vehicle loans, especially those involving automated salary deduction systems. This measure aims to prevent unnecessary spending and overconsumption, thereby promoting financial stability among households. Finally, the government could implement a compulsory debt management and retirement financial program aimed at fostering a sustainable financial stance and prudent debt levels within households of civil servants over the long term. This initiative should instill responsible spending habits tailored to household necessities and financial capabilities, consequently diminishing household reliance on material possessions. Equally essential is increasing household awareness regarding retirement planning, which is crucial for enhancing long-term financial resilience.

Acknowledgement

I would like to extend my sincere gratitude to all those who contributed and cooperated in the completion of this research. Special thanks are due to all the respondents in the selected ministries for their invaluable assistance and responses. Their contributions have been crucial to the success of this study. I am also deeply grateful to my supervisors for providing unwavering guidance and support throughout the research process. Their expertise and encouragement provided have been instrumental in shaping this work.

Conflict of Interest Statement

The authors agree that this research was conducted in the absence of any self-benefits, commercial, or financial conflicts and declare the absence of conflicting interests with the funders.

References

Achtziger, A., Hubert, M., Kenning, P., Raab, G., & Reisch, L. (2015). Debt out of control: The links between self-control, compulsive buying, and real debts. *Journal of Economic Psychology*, *49*, 141-149. https://doi.org/10.1016/j.joep.2015.04.003

Adzis, A. A., Bakar, J. A., & Shahar, H. K. (2017). Factors influencing young adults' debt in Malaysia. *Journal of Business and Retail Management Research*, *12*(1), 76-85. https://jbrmr.com/cdn/article_file/content_90353_17-10-04-21-42-41.pdf

Agensi Kaunseling dan Pengurusan Kredit (2022). Rebuilding Financial Resilience: What Consumers Can Learn from the Pandemic. *AKPK Financial Education and Well-being Research Center* (pp. 1-64). https://l1nq.com/lYCuG

Ahuvia, A., & Wong, N. (1995). Materialism: Origins and implications for personal well-being. *ACR European Advances.* https://worlddatabaseofhappiness.eur.nl/hap_bib/freetexts/ahuvia_a_1995.pdf

Anderloni, L., Bacchiocchi, E., & Vandone, D. (2012). Household financial vulnerability: An empirical analysis. *Research in Economics, 66*(3), 284-296. https://doi.org/10.1016/j.rie.2012.03.001

Aziz, M. K. M. A., Zahari, R. M., & Nordin, S. H. B. (2018). Civil servants' debt: Risks and policy considerations. *Financial Stability Review Bank Negara Malaysia 2018* (June), 31-36. https://www.bnm.gov.my/documents/20124/65312/en_fs_01.pdf

Bank Negara Malaysia (2022). Key Developments in the Second Half of 2022. *Financial Stability and Payment Systems Report. Bank Negara Malaysia* (BNM), 16. https://www.bnm.gov.my/documents/20124/10150236/fsr22h2_en_book.pdf

Belk, R. W. (1985). Materialism: Trait aspects of living in the material world. *Journal of Consumer Research*, *12*(3), 265-280. https://doi.org/10.1086/208515

Chichaibelu, B. B., & Waibel, H. (2018). Over-indebtedness and its persistence in rural households in Thailand and Vietnam. *Journal of Asian Economics*, *56*, 1-23. https://doi.org/10.1016/j.asieco.2018.04.002

Coletta, M., De Bonis, R., & Piermattei, S. (2019). Household debt in OECD countries: The role of supply-side and demand-side factors. *Social Indicators Research*, *143*(3), 1185-1217. https://doi.org/10.1007/s11205-018-2024-y

Cziriak, M. (2022). Households' financial fragility during the COVID-19 pandemic in Germany. *ZEW-Centre for European Economic Research Discussion Paper* (Paper No. 22-070). https://doi.org/10.2139/ssrn.4397902

D'Alessio, G., & Iezzi, S. (2013). Household over-indebtedness: Definition and measurement with Italian data. *Bank of Italy Occasional* (Paper No. 149). https://doi.org/10.2139/ssrn.2243578

Emmons, W. R., & Noeth, B. J. (2013). Economic vulnerability and financial fragility. *Economic Research Federal Reserve Bank of St. Louis Review*, *95*(5), 361-388. https://doi.org/10.20955/r.95.361-388

Fasianos, A., Godin, A., Kinsella, S., & Wu, W. (2014). *Household indebtedness and financial fragility across age cohorts, evidence from European countries*. University of Limerick.

Gardarsdottir, R.B., Dittmar, H. (2012). The relationship of materialism to debt and financial well-being: the case of Iceland's perceived prosperity. *Journal of Economic Psychology*, *33*, 471-481. https://doi.org/10.1016/j.joep.2011.12.008

Haq, W., Ismail, N. A., & Satar, N. M. (2018). Household debt in different age cohorts: A multilevel study. *Cogent Economics & Finance*, *6*(1), 1455406. https://doi.org/10.1080/23322039.2018.1455406

Idris, F. H., Krishnan, K. S. D., & Azmi, N. (2013). Relationship between financial literacy and financial distress among youths in Malaysia - An empirical study. *Geografia*, *9*(4), 106-117. http://journalarticle.ukm.my/6658/1/11oke.geografia-okt2013-faoziah_et_al-edam1.pdf

Karambakuwa, R. T., & Ncwadi, R. (2021). Determinants of household over-indebtedness in South Africa. *International Journal of Business and Economic Development (IJBED)*, *9*(2), 11-24. https://doi.org/10.24052/ijbed/v09n02/art-02

Kasser, T., & Ryan, R. M. (1996). Further examining the American dream: Differential correlates of intrinsic and extrinsic goals. *Personality and Social Psychology Bulletin*, *22*(3), 280-287. https://doi.org/10.1177/0146167296223006

Kim, H. J., Lee, D., Son, J. C., & Son, M. K. (2014). Household indebtedness in Korea: Its causes and sustainability. *Japan and the World Economy*, *29*, 59-76. https://doi.org/10.1016/j.japwor.2013.12.001

Lea, S. E., Webley, P., & Levine, R. M. (1993). The economic psychology of consumer debt. *Journal of Economic Psychology*, *14*(1), 85-119. https://doi.org/10.1016/0167-4870(93)90041-i

Loke, Y. J. (2016). Living beyond one's means: Evidence from Malaysia. *International Journal of Social Economics*, *43*(1), 2-18. https://doi.org/10.1108/ijse-11-2013-0248

Loke, Y. J. (2017). Financial vulnerability of working adults in Malaysia. *Contemporary Economics*, *11*(2), 205-218. https://doi.org/10.5709/ce.1897-9254.237

Lombardi, M. J., Mohanty, M. S., & Shim, I. (2017). The real effects of household debt in the short and long run. *BIS Working Paper* (Paper No. 607). https://encr.pw/GSUY9

Lucic, A., Uzelac, M., Previsic, A. (2021). The power of materialism among young adults: Exploring the effects of values on impulsiveness and responsible financial behavior. *Young Consumer 22(2)*, 254-271. https://doi.org/10.1108/yc-09-2020-1213

Lusardi, A., Schneider, D. J., & Tufano, P. (2011). *Financially fragile households: Evidence and implications*. NBER Working Paper Series (No. 17072). *National Bureau of Economic Research*. https://doi.org/10.3386/w17072

Mahdzan, N. S., Zainudin, R., & Shaari, M. S. (2023). The influence of religious belief and psychological factors on borrowing behaviour among Malaysian public sector employees. *Asia-Pacific Journal of Business Administration*, *15*(3), 361-385. https://doi.org/10.1108/apjba-10-2020-0362

Maison, D., & Adamczyk, D. (2020). The relations between materialism, consumer decisions and advertising perception. *Procedia Computer Science*, *176*, 2526-2535. https://doi.org/10.1016/j.procs.2020.09.320

Magri, S. (2002). *Italian households' debt: Determinants of demand and supply* (No. 454, pp. 1-69). Bank of Italy, Economic Research and International Relations Area.

Meng, X., Hoang, N. T., & Siriwardana, M. (2013). The determinants of Australian household debt: A macro level study. *Journal of Asian Economics*, *29*, 80-90. https://doi.org/10.1016/j.asieco.2013.08.008

Michelangeli, V., & Pietrunti, M. (2014). A Microsimulation Model to evaluate Italian Households' Financial Vulnerability. *International Journal of Microsimulation*, *7*(3), 53-79. https://doi.org/10.34196/ijm.00107

Michelangeli, V., & Rampazzi, C. (2016). *Indicators of financial vulnerability: A household level study*. Bank of Italy Occasional Paper (Paper No. 369). https://www.bancaditalia.it/pubblicazioni/qef/2016-0369/QEF_369.pdf

Mutsonziwa, K., & Fanta, A. (2019). Over-indebtedness and its welfare effect on households: Evidence from the Southern African countries. *African Journal of Economic and Management Studies*, *10*(2), 185-197. https://doi.org/10.1108/AJEMS-04-2018-0105

Nair, Y., Paim, L., Sabri, M. F., & Rahim, H. A. (2016). Predictors of bankruptcy probability among Malaysian civil servants: examining the subjective measurement. *Journal of Emerging Economies and Islamic Research*, *4*(1), 22-32. https://doi.org/10.24191/jeeir.v4i1.9076

Nizar, N. B. (2015). Determinants of Malaysia household debt: Macroeconomic perspective. *Journal of Business and Economics*, 7(8), 1234-1245. http://academicstar.us/UploadFile/Picture/2017-5/201751862828438.pdf

Noerhidajati, S., Purwoko, A. B., Werdaningtyas, H., Kamil, A. I., & Dartanto, T. (2021). Household financial vulnerability in Indonesia: Measurement and determinants. *Economic Modelling*, *96*, 433-444.

O'Neill, B., Sorhaindo, B., Prawitz, A. D., Kim, J., & Garman, E. T. (2006). Financial distress: Definition, effects, and measurement. *Consumer Interests Annual*, *52*, 1-8.

Pangestu, S., & Karnadi, E. B. (2020). The effects of financial literacy and materialism on the savings decision of generation Z Indonesians. *Cogent Business and Management*, *7*(1), 1743618. https://doi.org/10.1080/23311975.2020.1743618

Piovarči, V. (2021). The effect of socio-economic and demographic factors on household indebtedness: Evidence from Slovakia. *Ekonomické Rozhl'ady/Ecomomic Review*, *50*(2). https://euba.sk/www_write/files/SK/ekonomicke-rozhlady/2021/er2_2021_piovarci_fulltext.pdf

Poh, L. M., Sabri, M. F., Wahab, H. A. R. A., & Wijekoon, R. (2021). Determinants of financial vulnerability among civil servants in Peninsular Malaysia. *Malaysian Journal of Consumer and Family Economics*, *27*, 113-143. https://www.researchgate.net/publication/354224211_Determinants_of_Financial_Vulnerability_Among_Civil_Servants_in_Peninsular_Malaysia

Rahim, H. A., Sabri, M. F., Rahim, F. F. M., Othman, M. A., & Magli, A. S. (2020). Personal, financial and job-related factors affecting Malaysian employees' presenteeism in the service sector. *International Journal of Academic Research in Business and Social Sciences*, *10*(16), 250-277. https://doi.org/10.6007/ijarbss/v10-i16/8310

Rahman, M., Azma, N., Masud, M. A. K., & Ismail, Y. (2020). Determinants of indebtedness: Influence of behavioral and demographic factors. *International Journal of Financial Studies, 8*(1), 1-14. https://doi.org/10.3390/ijfs8010008

Richins, M. L., & Dawson, S. (1992). A consumer values orientation for materialism and its measurement: Scale development and validation. *Journal of Consumer Research*, *19*(3), 303-316. https://doi.org/10.1086/209304

Šubová, N., Mura, L., & Buleca, J. (2021). Determinants of household financial vulnerability: Evidence from selected EU countries. *E&M Economics and Management, 24*(3), 186-207. https://doi.org/10.15240/tul/001/2021-3-011

Trzcińska, A., & Sekścińska, K. (2021). Financial status and materialism–The mediating role of self-esteem. *Australian Journal of Psychology*, *73*(4), 557-568. https://doi.org/10.1080/00049530.2021.1944315

Wałęga, G., & Wałęga, A. (2021). Over-indebted households in Poland: Classification tree analysis. *Social Indicators Research*, *153*(2), 561-584. https://doi.org/10.1007/s11205-020-02505-6

Waqas, M. and Siddiqui, D.A. (2021). Does materialism, emotions, risk and financial literacy affect the propensity for indebtedness in Pakistan: The complementary role of hedonism and demographics. *Social Science Research Network*. https://doi.org/10.2139/ssrn.3942317

Watson, J. J. (2003). The relationship of materialism to spending tendencies, saving, and debt. *Journal of Economic Psychology*, *24*(6), 723-739. http://dx.doi.org/10.1016/j.joep.2003.06.001

Yusof, S. A., Rokis, R. A., & Jusoh, W. J. W. (2015). Financial fragility of urban households in Malaysia. *Jurnal Ekonomi Malaysia*, *49*(1), 15-24.

Zakaria, R. H., Jaafar, N. I. M., & Ishak, N. A. (2017). Household debt decision: Poverty or psychology? *International Journal of Business & Society*, *18*(3), 515-532. https://www.ijbs.unimas.my/images/repository/pdf/Vol18-no3-paper8.pdf