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Debt and life satisfaction: Unraveling the well-being divide among households in Abu Dhabi

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ABSTRACT

This study explores the impact of household debt on subjective well-being in Abu Dhabi, aiming to identify key factors that distinguish indebted from non-indebted individuals. Using data from 32,406 heads of households in the fourth cycle of the Abu Dhabi Quality of Life Survey, the analysis applies discriminant analysis to determine the well-being indicators that best differentiate between the two groups. ANOVA is also used to examine variations among indebted individuals by gender, nationality, age, education, and marital status. Eight indicators emerged as significant discriminators: income satisfaction, ability to meet essential expenses, perceived relative income, mental health, trust in others, family satisfaction, friends' satisfaction, and life satisfaction. Notably, subjective physical health did not emerge as a significant factor. The discriminant model achieved a classification accuracy of 89.55%. Further analysis revealed that women, younger individuals, Emiratis, those with lower education levels, and divorced or separated individuals reported greater vulnerability when in debt. The findings indicate that debt affects not only financial conditions but also emotional and relational aspects of life. The study highlights the need for integrated policy responses, including financial literacy programs, targeted mental health support, and inclusive social interventions to address the broader impacts of indebtedness in the Gulf context.

Contribution/Originality: This study offers novel evidence on the debt–well-being relationship from the Gulf region using a large-scale dataset. By applying discriminant analysis to identify psychosocial and economic differentiators of indebtedness, it highlights unique regional dynamics and policy gaps often overlooked in international debt literature.

1. INTRODUCTION

Indebtedness has become a pervasive element of contemporary financial life, intricately woven into the fabric of both individual and collective well-being (Drentea & Lavrakas, 2000; Gathergood, 2012; Goode, 2012). As modern economies have evolved, so too has the reliance on various forms of credit, making debt an almost inevitable aspect of personal financial management. While debt can serve as a powerful financial tool, enabling access to education, housing, and essential goods, its implications for subjective well-being (SWB) are complex and multifaceted (Addo, 2014; Betti, Dourmashkin, Rossi, & Ping Yin, 2007). The relationship between debt and SWB is increasingly gaining attention in academic literature, particularly as economic security is recognized as a crucial determinant of overall life satisfaction (Gregorio & Lee, 2002).

While much of the existing literature emphasizes income as the primary economic determinant of well-being, relatively fewer studies have explored the distinct and complex effects of household debt (Tay, Batz, Parrigon, & Kuykendall, 2017). This gap partly stems from the varied conceptualizations of debt from manageable credit to overwhelming liabilities and the methodological difficulties in quantifying its impact on households (Betti et al., 2007; Fitch, Hamilton, Bassett, & Davey, 2011). Moreover, subjective well-being (SWB) typically defined through life satisfaction, affective states, and satisfaction with specific life domains (Diener, 1984; Diener, Emmons, Larsen, & Griffin, 1985; Diener, Suh, Lucas, & Smith, 1999) is often interlinked with mental health, making it challenging to isolate debt's specific influence.

In Abu Dhabi, United Arab Emirates, rapid economic development has brought shifts in both social expectations and financial behaviors, presenting a unique context for examining the debt–well-being relationship (Aldhaheri et al., 2023; Badri et al., 2022a; Badri et al., 2023; Malaviya, Bishai, Soni, & Suliman, 2022). Rising debt levels, particularly among middle-aged residents (Fast Company Middle East, 2024), heighten the urgency to assess how debt intersects with well-being. In a region where high living costs and status-driven consumption prevail (Arthur, Sherman, Al Hamel, & Al Marzooqi, 2017; Katsaiti, Ahmad, Tajuddin, & Abdulrouf, 2017), indebtedness may exert intensified psychological and social effects. Thus, investigating this dynamic is both timely and essential for informed policy and public health planning.

The primary aim of this research is to explore the debt-life satisfaction paradox by analyzing how various determinants of well-being interact with indebtedness among residents of Abu Dhabi. Specifically, the study seeks to examine the extent to which debt influences key aspects of well-being, including life satisfaction, mental health, social relationships, and economic security. By focusing on the socio-economic context of Abu Dhabi, this study aims to provide a nuanced understanding of the ways in which debt affects subjective well-being in a region that has been relatively underexplored in the existing literature.

The significance of this study lies in its potential to fill a critical gap in the literature on debt and well-being, particularly within the unique socio-economic landscape of Abu Dhabi. Moreover, the findings of this research are expected to have broader applicability beyond the region, offering lessons that can be applied in other contexts where debt plays a significant role in shaping well-being. By addressing the complex and often paradoxical nature of debt's impact on subjective well-being, this study will not only advance academic understanding but also inform the development of targeted policy interventions aimed at enhancing the quality of life for residents of Abu Dhabi.

While previous studies have documented the psychological and economic consequences of indebtedness, many have focused primarily on Western contexts and emphasized individual-level financial stress or income-related outcomes. These studies often overlook the broader social and relational dimensions of well-being, such as social trust, family satisfaction, and life satisfaction, particularly in non-Western or rapidly modernizing societies. Moreover, most existing research treats debt as a uniform financial indicator, rarely distinguishing the nuanced roles of subjective economic perceptions or incorporating robust multivariate classification techniques. This study addresses these gaps by applying discriminant analysis to a large, regionally representative dataset from Abu Dhabi, offering a comprehensive view of how debt interacts with emotional, social, and demographic well-being. By focusing on predictors beyond income such as mental health and social relations and exploring subgroup differences, the study adds conceptual and policy relevance to the growing literature on the debt-well-being paradox.

2. REVIEW OF LITERATURE

Debt, in various forms, can be both a burden and a tool for economic mobility. It serves as a financial tool; debt enables consumption and investment, but its implications for well-being are complex. Despite significant research attention on the relationship between debt and subjective well-being, there is a lack of consensus on debt's influence on well-being, stemming from diverse conceptualizations of debt, differences in debt types, methods of quantifying household debt, and various individual coping mechanisms (Betti et al., 2007; Fitch et al., 2011; Frankham,

Richardson, & Maguire, 2020). While some debts may be perceived as manageable, excessive debt and high-interest consumer debt are more likely to result in financial stress and emotional strain (Brown, Taylor, & Price, 2005).

The psychological consequences of debt are well established, with numerous studies linking indebtedness to mental health issues such as stress, depression, and anxiety (Amit et al., 2020; Fitch et al., 2011; Richardson, Elliott, & Roberts, 2013; Turunen & Hiilamo, 2014). Debt-related stress can escalate into chronic psychological distress, often expressed through symptoms such as sleep disturbances, irritability, and feelings of hopelessness (Ryu & Fan, 2023). These effects frequently spill over into other areas of life, including strained interpersonal relationships. Additionally, debt stigma may foster feelings of shame and isolation, discouraging individuals from seeking help (Goode, 2012; Sweet, Nandi, Adam, & McDade, 2013). Vulnerable groups, such as the unemployed and low-income households, are particularly susceptible to these effects, especially when social support systems are lacking (Bjørlykhaug, Karlsson, Hesook, & Kleppe, 2022; Frankham et al., 2020).

Debt also exerts a measurable impact on physical health. Studies have associated financial strain with physical symptoms, including sleep problems, headaches, and an increased risk of chronic illnesses such as cardiovascular disease (Arvidsdotter, Marklund, Kylén, Taft, & Ekman, 2016; Drentea & Lavrakas, 2000). Chronic financial stress may compromise the immune system and accelerate physiological decline (Hiilamo, 2020). Importantly, research indicates that the *perceived* burden of debt rather than the actual amount has a stronger correlation with subjective health outcomes (Huang, Guo, & Kim, 2010; Kahn & Pearlin, 2006; Meltzer, Bebbington, Brugha, Farrell, & Jenkins, 2013). Those who view their debt as overwhelming tend to report poorer health, regardless of income. Financial pressure may also prompt individuals to delay or forgo essential healthcare, such as medical check-ups or medications, thereby exacerbating existing health issues (Melzer, 2011).

Beyond psychological and physical dimensions, debt has far-reaching effects on financial security. Households facing high debt burdens often struggle to maintain savings or achieve financial mobility, as large portions of income go toward repayments (Ryu & Fan, 2023). This strain intensifies when high-interest debt accumulates, limiting long-term stability. Lower-income households are especially affected, frequently facing less favorable loan terms and higher interest rates (Hamilton, Malo, & Medin, 2019) which can lead to reduced job stability and even unemployment (Drentea & Reynolds, 2012). As Weissman and Russell (2020) note, the subjective experience of financial strain plays a more pivotal role in well-being outcomes than the objective debt amount itself.

Debt's influence often extends beyond health and financial domains and into the social domain, straining relationships and diminishing trust within social networks. Debt-induced stress often leads to family conflicts, particularly between spouses, as financial strain erodes communication and trust (Dew, 2011a, 2011b). Elevated levels of debt are linked to marital instability and divorce (Sweet et al., 2013). Social stigma surrounding debt can lead to withdrawal from social interactions, exacerbating feelings of loneliness and depression, particularly among older adults (Goode, 2012; Hodson, Dwyer, & Neilson, 2014). Research emphasizes the importance of strong social ties in mitigating financial stress (Tran, Lam, & Legg, 2018; Viseu et al., 2018). However, debt often undermines these connections, as individuals prioritize debt repayment over relationships, further amplifying debt's negative impact on well-being (Bray & Gunnell, 2006; Helliwell, Layard, & Sachs, 2012).

The impact of debt on well-being is not uniform; it varies significantly across demographic groups such as gender, education, marital status, nationality, and age. Research consistently shows that gender influences how individuals experience financial stress. Women, particularly single mothers, often face heightened debt-related anxiety due to lower wages, limited financial resources, and greater caregiving responsibilities (Addo, 2014; Fonseca, Mullen, Zamarro, & Zissimopoulos, 2012; Marcil et al., 2020). In contrast, men are more likely to engage in financial risk-taking, which may influence the type and perception of their debt (Brown, Taylor, & Price, 2016).

Educational attainment also moderates the effect of debt on well-being. While higher education is associated with better job prospects and financial literacy, student loan debt can still be a source of prolonged stress, particularly for those with lower earnings (Houle, 2014; Zafar, 2019). Marital status further adds complexity; although married

couples may benefit from shared financial responsibilities, debt can create conflict and contribute to marital dissatisfaction or divorce (Addo & Zhang, 2020; Dew, 2011b; Sweet et al., 2013).

Nationality and age also influence how debt is experienced. In settings like Abu Dhabi, where both nationals and expatriates reside, debt stress may be amplified for expatriates due to reduced financial security and limited access to safety nets. Age differences are also significant—young adults often carry education or consumer debt, while older adults may face debt burdens with limited time for recovery before retirement (Brown & Gray, 2016; Lusardi & Tufano, 2015).

Overall, the literature emphasizes the multifaceted nature of debt's impact—extending across psychological, physical, financial, and social domains. Socioeconomic status, including income, education, and age, plays a central role in shaping how individuals cope with indebtedness, highlighting the importance of targeted, group-sensitive interventions.

3. ANALYSIS AND DESIGN

This study utilized data from the fourth cycle of the Abu Dhabi Quality of Life (QoL-4) Survey, conducted in 2023, which collected responses from 92,576 individuals across the three regions of Abu Dhabi. The current research focused specifically on household indebtedness, based on the question: *"Does your household have any debts or liabilities?"* This item was addressed solely to heads of households. Respondents who did not answer this question were excluded from the analysis.

Based on their responses, heads of households were classified into two categories: those with debts and those without debts. A series of preliminary analyses including correlation tests, ANOVA, factor analysis, and reliability analysis were conducted to ensure the validity and consistency of the selected variables. These procedures resulted in a final analytical sample of 32,406 valid cases, comprising 9,284 (28.6%) respondents without debts and 23,122 (71.4%) with debts.

The primary analytical method used was discriminant analysis (DA), performed using SPSS (McGarigal, Cushman, & Stafford, 2000; Tabachnick & Fidell, 2007). DA is a classification technique that identifies linear combinations of predictor variables that best distinguish between predefined groups (Klecka, 1980). It has been widely applied in well-being and quality of life studies internationally for example, in research on character strengths and well-being (Anjum & Amjad, 2016), adolescent quality of life (Odunlami, 2017), and osteoarthritis patients (Strohonova, Bondar, & Varzhapetian, 2019). Sureshkumar and Marimuth (2014) used DA to assess work-life quality in private sector employees, while Taher (2013) applied it to academic professionals. Within the Gulf context, Badri et al. (2022b) employed DA to examine well-being determinants among retirees in Abu Dhabi.

Prior to running DA, assumptions of normality and multicollinearity were evaluated. The Kolmogorov-Smirnov and Shapiro-Wilk tests were used to assess normality. The Shapiro-Wilk results showed p-values ranging from 0.067 to 0.866, confirming that all predictor variables met the normality assumption (Elliott & Woodward, 2007). Further support was provided by skewness values between −0.5 and 0.5 and kurtosis values between −2.0 and 2.0 (Altman & Bland, 1996; Krzanowski, 1990). To assess multicollinearity, inter-variable correlations were reviewed and ranged between 0.022 and 0.402, which are well below the threshold of 0.8, indicating no concerns regarding multicollinearity (Tillmanns & Krafft, 2017).

Given that DA does not account for categorical variables (e.g., gender, marital status, nationality, education), analysis of variance (ANOVA) was also used to examine differences between the two groups concerning these demographic variables.

The final list of determinants used in the study are as follows:

- INC1 - How would you compare your household income with other families in Abu Dhabi? (Scale 1-5: from very low to very high).

- INC2 - Thinking of your household total income, is your household able to pay for its usual necessary expenses? (Scale 1-5: from with great difficulty to very easily).
- INC3 - How satisfied are you with your household income? (Scale from 1-5: very dissatisfied to very satisfied).
- MENT - Composite of seven subjective mental health issues: feeling sad and low, worry or anxiety, difficulty in concentrating or remembering things, physical pain, feeling fear, feeling loneliness, and feeling bored. (Scale 1-5 for each: from not at all to a great extent). The Cronbach's Alpha for the resulting composite variable was 0.9333, which is highly acceptable.
- TRST - Generally speaking, do you agree that most people can be trusted? (Scale 1-5: from strongly disagree to strongly agree).
- FAMS - In general, I am satisfied with my family life. (Scale 1-5: from strongly disagree to strongly agree).
- FRNS - In general, I am satisfied with my relationships with other people I know. (Scale 1-5: from strongly disagree to strongly agree).
- LFS - How satisfied are you with your life nowadays? (Scale 0-10).

The selection of discriminant analysis (DA) as the primary analytical method is well-suited for the study's objective of identifying well-being factors that discriminate between binary groups—households with and without debts. DA is particularly useful in contexts where the goal is to uncover linear combinations of predictors that best distinguish between predefined groups. In contrast to logistic regression, which models the probability of group membership, DA emphasizes the structure and strength of the underlying dimensions that separate the groups. Assumptions of normality and absence of multicollinearity were thoroughly tested and satisfied, ensuring the reliability of the model. The high canonical correlation (0.844) and classification accuracy (89.55%) further support the robustness and validity of the analytical approach. Additionally, ANOVA was employed to complement the DA by examining differences across demographic groups, such as gender, nationality, education, and marital status—insights that DA alone would not capture due to its treatment of categorical variables. Together, these methods provide a comprehensive analytical framework for uncovering both predictive and explanatory dimensions of the debt-well-being relationship.

4. RESULTS

Table 1 provides an overview of the demographics of the respondents and their debt status. The data reveals that a significantly larger proportion of households were male-headed, accounting for 68.79% of the sample. Among male-headed households, 70.35% reported being in debt, while a slightly higher percentage of female-headed households (73.56%) acknowledged having debt. When examining marital status, the data shows that 80.60% of respondents were married. However, the highest debt levels were observed among divorced and separated individuals, with 79.15% and 76.66%, respectively, reporting debts. Married respondents reported a lower incidence of debt at 72.15%. Additionally, 57.76% of the widowed group were in debt.

In the analysis of debt status across different age categories, it is observed that the highest percentage of respondents who reported being in debt were within the age range of 30-49 years. The 40-44 age group reported the highest prevalence of debt (76.61%). A notable 83.92% of Emirati respondents reported being in debt, in sharp contrast to 58.44% of non-Emiratis. Among the two education categories, those with less than a college qualification reported a higher rate of indebtedness (78.28%) compared to 67.92% of those with a college degree or higher. These findings highlight significant disparities in indebtedness across gender, marital status, nationality, and education level.

Table 1. Profile of respondents (Heads of households) and debt status.

	Total	With debts	Without debts
Gender			
Males	22291 (68.79%)	15,681 (70.35%)	6,610 (29.65%)
Females	10115 (31.21%)	7,441 (73.56%)	2,674 (26.43%)
Marital status			
Single	2720 (8.39%)	1,639 (60.26%)	1,081 (39.74%)
Married	26121 (80.60%)	18,847 (72.15%)	7,274 (27.85%)
Divorced	2388 (7.37%)	1,891 (79.15%)	498 (20.85%)
Separated	347 (1.07%)	266 (76.66%)	81 (23.34%)
Widow	831 (2.56%)	480 (57.76%)	351 (42.24%)
Age			
15-19	121 (0.37%)	74 (61.16%)	47 (38.84%)
20-24	395 (1.22%)	275 (69.62%)	120 (30.38%)
25-29	1912 (5.90%)	1349 (70.55%)	563 (29.45%)
30-34	4516 (13.94%)	3347 (74.11%)	1169 (25.89%)
35-39	6227 (19.22%)	4618 (74.16%)	1606 (25.84%)
40-44	6661 (20.55%)	5103 (76.61%)	1558 (23.39%)
45-49	4613 (14.24%)	3415 (74.03%)	1198 (25.97%)
50-54	3263 (10.07%)	2272 (69.63%)	991 (30.37%)
55-59	1788 (5.52%)	1133 (63.37%)	655 (36.63%)
60+	2910 (8.98%)	1536 (52.78%)	1374 (47.22%)
Nationality			
Emirati	16,422 (50.68%)	13,781 (83.92%)	2,641 (16.08%)
Non-Emirati	15,984 (49.32%)	9,341 (58.44%)	6,643 (41.56%)
Education			
College degree or higher	21,686 (66.92%)	14,730 (67.92%)	6,956 (32.08%)
Less than college degree	10,720 (32.08%)	8,392 (78.28%)	2,328 (21.72%)

Table 2 outlines the test of equality of group means, specifically examining the statistical significance of various predictor variables in the DA. The analysis employed Wilks' Lambda to assess the significance of each variable in distinguishing between groups. Several predictors did not reach statistical significance and were therefore excluded from further analysis. These non-significant factors include family size, housing satisfaction, job and work satisfaction, work-life balance, number of working hours, sleep quality, religiosity, and volunteering. The exclusion of these variables suggests that, although potentially relevant in other contexts, they did not significantly influence the outcomes of interest in this particular analysis.

As shown in Table 2, the f-values, which denote the significance of the indicators, suggest that the three income-related variables (*Income compared to others, ability to make ends meet, and income satisfaction*) and life satisfaction record the highest values. These income-related variables underscore the substantial influence of financial well-being on the model. Additionally, *mental health*, represented by a composite measure of seven mental health variables, also emerged as a significant predictor, with an F-value of 834.318. The element of social trust was identified as a significant contributor, with an F-value of 318.249. These two social relationship variables were also significant in the model.

Table 2. Tests of equality of group means.

Determinants	Wilks' Lambda	F	df1	df2	Sig.
Income compared to others (INC1)	0.969	1027.076	1	32399	0.000
Ability to make ends meet (INC2)	0.934	2291.155	1	32399	0.000
Income satisfaction (INC3)	0.947	1812.134	1	32399	0.000
Mental health (MENT)	0.975	834.318	1	32399	0.000
Social trust (TRST)	0.990	318.249	1	32399	0.000
Satisfaction with family life (FAMS)	0.992	255.862	1	32399	0.000
Satisfaction with social relationships (FRNS)	0.995	177.735	1	32399	0.000
Life satisfaction (LFS)	0.970	1002.939	1	32399	0.000

Table 3. Correlation matrix.

Determinants	INC1	INC2	INC3	MENT	TRST	FAMS	FRNS	LFS
INC1	1.000							
INC2	0.606	1.000						
INC3	0.604	0.655	1.000					
MENT	-0.253	-0.270	-0.308	1.000				
TRST	0.181	0.172	0.189	-0.222	1.000			
FAMS	0.255	0.264	0.338	-0.427	0.206	1.000		
FRNS	0.189	0.207	0.264	-0.370	0.262	0.517	1.000	
LFS	0.400	0.400	0.482	-0.453	0.211	0.470	0.372	1.000

When interpreting the results of discriminant analysis, it is important to ensure that the predictors are not highly correlated with one another, as high correlations can lead to multicollinearity. In Table 3, the highest correlations are observed between *income satisfaction* and *ability to make ends meet*, with a correlation coefficient of 0.655, and between *income satisfaction* and *financial security*, with a correlation of 0.606. These values, while below the 0.7 threshold (Tabachnick & Fidell, 2007), suggest a moderate level of correlation, indicating that these variables share some common variance but are not excessively collinear, thereby suitable for inclusion in the discriminant model.

When examining the log-determinants, we observe that the values are -1.727 for those with debts, -1.661 for those without debts, and -1.7001 for the pooled within-group. These values are fairly close to each other, which suggests that the assumption of equal covariance matrices is reasonable for our analysis. Regarding Box's M test, the significance level is 0.104, which is above the threshold for significance. This indicates that we do not have sufficient evidence to reject the null hypothesis that the population covariance matrices are equal. For the null hypothesis to be rejected, the significance level would need to be below 0.001. Since our result is not significant, this supports the validity of using discriminant analysis in this context. In summary, when interpreting canonical discriminant functions, a larger eigenvalue indicates that the function explains more variance in the dependent or outcome variable. In this case, the canonical correlation is 0.844, which is relatively high. By squaring this value, we obtain an effect size of 0.712, indicating that the function accounts for approximately 71.2% of the variance in the outcome variable. The Wilks' Lambda value is 0.875, and it is statistically significant ($p = 0.001$), suggesting that our prediction model fits the data well and that the discriminant function effectively distinguishes between the groups.

Table 4 presents the structure matrix, which is crucial for interpreting the contributions of each predictor variable to the discriminant function. The structure matrix contains the correlations between each predictor and the discriminant function. All values in the structure matrix should be above 0.3 to ensure that the variables are meaningfully contributing to the function. In our analysis, all the values meet this criterion, indicating that each predictor is appropriately aligned with the discriminant function. The three income determinants register the highest coefficients in the structure matrix: *income compared to others* (0.880), *ability to make ends meet* (0.728), and *income satisfaction* (0.589). These high coefficients suggest that these income-related variables have the strongest relationship with the discriminant function, meaning they are the most influential in distinguishing between the groups.

Table 4. Structure matrix and the Canonical discriminant function coefficients.

Determinants	Structure matrix	Canonical discrimination function coefficients
	Function 1	Function 1
Income compared to others (INC1)	0.880	-0.091
Ability to make ends meet (INC2)	0.728	0.606
Income satisfaction (INC3)	0.589	0.273
Mental health (MENT)	0.582	-0.326
Social trust (TRST)	0.399	0.143
Satisfaction with family life (FAMS)	0.373	-0.129
Satisfaction with social relationships (FRNS)	-0.355	-0.182
Life satisfaction (LFS)	-0.329	0.064
Constant	--------	-1.032

The classification function coefficients (Table 5) are used to classify cases into one of the predefined groups based on the values of the predictor variables. These coefficients are essentially the weights assigned to each predictor variable in the discriminant function for each group.

Table 5. The classification function coefficients.

Determinants	Group 1: no debts	Group 2: with debts
Income compared to others (INC1)	2.204	2.136
Ability to make ends meet (INC2)	0.556	0.974
Income satisfaction (INC3)	0.165	0.356
Mental health (MENT)	7.654	7.431
Social trust (TRST)	1.542	1.630
Satisfaction with family life (FAMS)	2.774	2.687
Satisfaction with social relationships (FRNS)	4.682	4.623
Life satisfaction (LFS)	0.548	0.589
Constants	-30.619	-32.527

In summary, the model achieved an 89.55% correct classification rate for the original group cases, which is considered very good. This high level of accuracy suggests that the discriminant function is highly effective in classifying individuals into the correct debt group. In practical terms, this means that nearly 90% of the cases were correctly identified as either having debt or not, based on the predictors used in the model. Cross-validation was conducted using the "leave-one-out" method, where each case is classified by the functions derived from all other cases except the one being classified. This method helps ensure that the classification results are robust and not overly dependent on any single case. A correct classification rate near 90% is generally regarded as a strong outcome in discriminant analysis, indicating that the model has high predictive validity (Hair, Black, Babin, & Anderson, 2010). The combination of strong predictor variables and a high classification accuracy underscores the reliability and effectiveness of the discriminant function in this context.

Further analysis of variance across demographic groups was performed for each of the significant determinants in the DA model. The demographic variables selected were gender, marital status, age, nationality, and education. Table 6 shows the results for those with debts by their gender and nationality. Females report more negative outcomes for most indicators analysed. The most substantial gender difference is observed in mental health, with females scoring significantly higher than males, as indicated by an ANOVA F-value of 487.33. This highlights the pronounced disparity in mental well-being among indebted female respondents compared to their male counterparts. Furthermore, female heads of households consistently reported significantly lower scores across all three social relations indicators: *social trust*, *satisfaction with family life*, and *satisfaction with social relationships*. These findings suggest that females with debt experience greater challenges in social connectedness and relationships compared to males in similar financial situations. Life satisfaction also shows a notable gender difference among indebted respondents. Female householders reported lower life satisfaction scores (6.202) compared to males (6.497), reflecting a less favorable overall sense of well-being among women in debt. These statistically significant results indicate that gender plays a significant role in shaping well-being, particularly within the context of social relationships and mental health for those burdened by debt.

When analysing the differences between Emiratis and non-Emiratis with debts, Table 6 reveals that non-Emiratis tend to fare better on all eight significant well-being indicators. Non-Emiratis tend to have more favorable responses regarding income satisfaction, income relative to others, ability to make ends meet, social trust, mental health, satisfaction with family life, satisfaction with social relationships, and overall life satisfaction. The most significant differences between the two nationality groups are observed in income satisfaction, income relative to others, and social trust, with highly significant F-values of 360.818, 184.472, and 159.928, respectively. These values

highlight the pronounced disparities between Emiratis and non-Emiratis in terms of their financial perceptions and social trust.

Table 6. Means and ANOVA for respondents with debts, by gender and nationality.

Determinants	Gender		F	Sig.	Nationality		F	Sig.
	Male	Female			Emirati	Non-Emirati		
INC1	2.418	2.371	14.771	0.001	2.340	2.495	184.472	0.001
INC2	2.441	2.354	36.009	0.001	2.357	2.495	100.741	0.001
INC3	2.772	2.678	36.648	0.001	2.629	2.907	360.818	0.001
MENT	2.204	2.520	487.330	0.001	2.333	2.265	24.509	0.001
TRST	2.675	2.440	231.534	0.001	2.523	2.710	159.928	0.001
FAMS	3.952	3.767	127.530	0.001	3.872	3.922	10.182	0.001
FRNS	3.770	3.657	76.848	0.001	3.702	3.780	39.515	0.001
LFS	6.497	6.202	56.225	0.001	6.197	6.701	182.758	0.001

Table 7 highlights the differences among respondents with debts, categorized by age group. The data reveals that older respondents, specifically those aged 60 and above, report the highest level of life satisfaction, with a mean score of 7.327. In contrast, those aged 20-24 report the lowest life satisfaction, with a score of 5.406. Overall, this suggests that life satisfaction increases with age, even among individuals carrying debt. When it comes to other well-being indicators, older respondents also show more favorable results. Respondents aged 55-59 report the most positive outcomes in terms of *mental health*, *social trust*, and *satisfaction with family life*. This indicates that, despite financial burdens, older individuals tend to maintain stronger mental well-being and more robust social connections. Interestingly, the youngest group (aged 15-19) reports the highest level of *satisfaction with income compared to others*. This could reflect a more optimistic outlook on their financial situation relative to peers, even though they may be at an early stage in their financial journey. Regarding *satisfaction with social relationships*, respondents aged 50-54 stand out with the highest mean score of 3.969, while the youngest group (aged 15-19) reports the lowest level of satisfaction, with a mean score of 3.631. This may indicate that satisfaction with peer relationships grows with age, as older individuals may have more established friendships. On the measure of *income satisfaction*, respondents aged 30-34 show the lowest satisfaction, with a mean score of 2.374. This could reflect the financial pressures often faced during this life stage, such as career building and family responsibilities. Additionally, the two youngest groups (aged 15-19 and 20-24) report the poorest results in terms of *mental health*, with mean scores of 2.627 and 2.562, respectively. These findings suggest that younger individuals, especially those carrying debt, experience greater challenges in maintaining mental well-being.

When analyzing well-being indicators by marital status, Table 8 reveals that divorced individuals with debts consistently report the most negative outcomes across seven of the eight indicators. Among the divorced, life satisfaction reaches its lowest point (5.450), indicating that divorce may be particularly detrimental to overall well-being, especially for those carrying financial burdens. In contrast, widowed individuals with debts report the highest *life satisfaction* score, at 6.953, suggesting that they may have developed stronger coping mechanisms or social support systems to manage both emotional and financial stress. Single respondents provide the most negative scores when it comes to *income compared to others*, which could reflect feelings of financial inadequacy or pressure, potentially heightened by their single status and lack of household income pooling. On *mental health*, divorced individuals show the most negative outcomes, scoring 2.713, indicating that this group faces heightened emotional and psychological challenges while managing debt. On the other hand, married individuals report the most positive mental health score, at 2.220, suggesting that the emotional support and stability of marriage may serve as protective factors against the mental strain associated with debt. These findings illustrate the significant impact of marital status on well-being among indebted individuals, with divorced individuals being particularly vulnerable to negative outcomes in multiple aspects of well-being.

Table 7. Means and ANOVA for respondents with debts, by age category.

Determinants	Age categories										F	Sig.
	15-19	20-24	25-29	30-34	35-39	40-45	45-49	50-54	55-59	60+		
INC1	2.778	2.175	2.227	2.328	2.380	2.389	2.435	2.508	2.556	2.519	25.014	0.001
INC2	2.903	2.425	2.397	2.374	2.384	2.378	2.410	2.461	2.508	2.552	8.235	0.001
INC3	3.111	2.505	2.583	2.627	2.708	2.724	2.774	2.849	2.956	2.923	22.349	0.001
MENT	2.627	2.562	2.495	2.395	2.331	2.273	2.092	1.938	1.860	2.933	91.248	0.001
TRST	2.510	2.506	2.558	2.589	2.583	2.624	2.592	2.671	2.790	2.922	8.621	0.001
FAMS	3.691	3.703	3.734	3.767	3.865	3.958	4.052	4.209	4.282	2.940	53.640	0.001
FRNS	3.631	3.637	3.653	3.666	3.680	3.790	3.833	3.969	3.952	2.50	32.419	0.001
LFS	5.841	5.406	5.796	5.977	6.236	6.355	6.535	6.805	7.096	7.327	55.371	0.001

Table 8. Means and ANOVA for respondents with debts, by education attainment and marital status.

Determinants	Education attainment		F	Sig.	Marital status					F	Sig.
	Less than college degree	College degree or higher			Single	Married	Divorced	Separated	Widow		
INC1	2.602	2.396	476.484	0.001	2.331	2.431	2.181	2.275	2.330	37.148	0.001
INC2	2.721	2.456	510.358	0.001	2.524	2.434	2.126	2.282	2.260	40.872	0.001
INC3	3.082	2.726	870.562	0.001	2.668	2.780	2.439	2.530	2.738	37.457	0.001
MENT	2.152	2.255	106.234	0.001	2.690	2.220	2.713	2.700	2.339	143.775	0.001
TRST	2.782	2.558	392.695	0.001	2.494	2.637	2.282	2.552	2.613	41.633	0.001
FAMS	3.986	3.927	26.494	0.001	3.405	3.984	3.452	3.212	4.126	159.042	0.001
FRNS	3.819	3.735	81.873	0.001	3.539	3.774	3.508	3.524	3.891	50.773	0.001
LFS	6.971	6.437	358.720	0.001	5.814	6.547	5.450	5.516	6.953	79.298	0.001

5. DISCUSSIONS

This study offers new insights into the complex relationship between household debt and well-being in Abu Dhabi. Using discriminant analysis, key indicators such as income-related factors, mental health, and social connections emerged as significant in distinguishing between individuals with and without debt. These results reflect the broad reach of debt, affecting not just financial standing but emotional and social dimensions of life. Interestingly, subjective health was not a significant factor, which contrasts with many global findings and highlights the unique socio-economic context of Abu Dhabi, where strong public services may mitigate typical health-related effects of debt.

Three income-related indicators income satisfaction, ability to meet expenses, and perceived relative income proved to be the most important in the model. This finding aligns with global literature that emphasizes the centrality of financial security to subjective well-being (Gregorio & Lee, 2002; Tay et al., 2017). Debt contributes to economic hardship and disrupts financial stability, often creating a feedback loop of stress and reduced life satisfaction (Drentea & Reynolds, 2012; Hamilton et al., 2019). Moreover, the perception of financial strain more than the objective amount of debt appears critical to well-being outcomes (Weissman & Russell, 2020). Stigma, pressure to meet obligations, and feelings of failure can amplify the emotional toll (Goode, 2012; Purdam & Prattley, 2020).

The findings also support existing evidence linking debt with adverse mental health outcomes. Financial stress related to debt often manifests as anxiety, depression, and persistent emotional distress (Drentea & Reynolds, 2015; Fitch et al., 2011). In severe cases, individuals report hopelessness and cumulative psychological strain over time (Hamilton et al., 2019; Sun & Houle, 2020). These results reinforce the growing recognition of debt as not just a financial issue but also a serious mental health concern that requires integrated support services such as counseling and financial literacy programs (Jenkins et al., 2008; Meltzer et al., 2013).

Social connection indicators trust in others, family life satisfaction, and satisfaction with social relationships also play a significant role. Trust is a central element of social capital and has been associated with emotional resilience (Helliwell & Putnam, 2004). Debt may erode trust and contribute to isolation, especially when individuals feel vulnerable or ashamed of their financial status (Goode, 2012). Family relationships are also affected; financial pressures can lead to conflict, reduced communication, and marital strain, often contributing to dissatisfaction or divorce (Dew, 2011a; Hodson et al., 2014; Sweet et al., 2013). Friends and social networks, which often serve as emotional buffers, may also weaken under debt stress, leading to social withdrawal and further reductions in well-being (Bray & Gunnell, 2006; Coleman, 1988).

The impact of debt on life satisfaction is particularly strong, as it alters individuals' sense of control over their future and ability to meet personal goals. A consistent body of literature confirms that financial insecurity is one of the most robust predictors of reduced life satisfaction (Asebedo & Wilmarth, 2017; Drentea & Reynolds, 2012; Sweet et al., 2013). This study's findings are aligned with that view: life satisfaction, deeply intertwined with both emotional state and future expectations, serves as a key indicator of debt's broader effects.

An unexpected finding was the non-significance of subjective health in distinguishing between indebted and non-indebted individuals. Internationally, debt has been linked with poorer health outcomes (Brown et al., 2005; Hiilamo, 2020), but in Abu Dhabi, this relationship appears weaker. Several local factors may explain this. The UAE offers strong social safety nets, including free or subsidized healthcare for citizens, reducing the stress debt may place on physical health (Warth et al., 2019). Cultural attitudes may also play a role, with individuals in the region placing greater emphasis on financial and social status when evaluating well-being (Goode, 2012). Furthermore, stigma around discussing mental health may lead to underreporting of distress, muting its connection to subjective health (Sun & Houle, 2020). Strong family and community networks could also buffer health-related impacts through emotional and material support.

The ANOVA results further revealed significant demographic differences in debt status. Female-headed households showed a slightly higher debt burden, consistent with research indicating that women particularly those facing wage gaps and caregiving roles, are more financially vulnerable (Purdam & Prattley, 2020; Ryu & Fan, 2023).

Emiratis were more likely to be indebted than non-Emiratis, likely due to easier access to credit and societal expectations regarding lifestyle (Arthur et al., 2017; Goode, 2012). In contrast, non-Emiratis may face credit restrictions, resulting in lower debt levels but ongoing financial pressure.

Marital status also influenced debt levels. Divorced and separated individuals carried more debt, reflecting the economic disruption caused by marital dissolution, including legal and housing costs (Dew, 2011b; Hodson et al., 2014). Married individuals appeared more financially stable, benefiting from shared responsibilities.

Age and education level were also significant. Younger adults were more indebted, likely due to education loans and early-career financial commitments (Choi, 2009) while individuals with lower education had higher debt levels, aligning with global evidence that links lower educational attainment with reduced income and less favorable loan conditions (Hamilton et al., 2019; Kahn & Pearlin, 2006).

In summary, this study highlights the **multidimensional nature of debt's impact on well-being**. Income-related stress, mental health concerns, and weakened social connections together illustrate the deep and diverse burden debt imposes on individuals and households. The distinct socio-economic environment in Abu Dhabi, marked by strong institutional support and cultural norms, also shapes the nature of these relationships. These findings can inform targeted policies that address not only financial literacy and debt management but also broader emotional and relational needs linked to financial hardship.

6. CONCLUSIONS

This study offers valuable insights into the complex relationship between household debt and well-being within Abu Dhabi's distinctive socio-economic landscape. Using discriminant analysis, several key indicators—economic factors, mental health, social relationships, and life satisfaction emerged as significant in distinguishing between individuals with and without debt. These findings confirm that debt's impact extends beyond financial hardship, affecting psychological well-being and the quality of social connections.

The analysis also highlights significant demographic disparities. Groups such as women, Emiratis, divorced or separated individuals, younger adults, and those with lower educational attainment are more susceptible to the negative effects of debt. These disparities underscore the need for more nuanced and inclusive policy responses. In Abu Dhabi, debt represents not only an economic burden but also a social issue with uneven consequences across population segments. Tailored strategies that address the psychological, social, and financial aspects of debt while taking into account demographic vulnerabilities will be essential to building greater financial resilience and enhancing overall well-being in the emirate.

The study has certain limitations. Firstly, it primarily focuses on quantitative well-being indicators and does not explore qualitative aspects such as personal perceptions or coping mechanisms related to debt. Additionally, the cross-sectional nature of the survey limits our ability to assess the long-term impacts of debt on well-being over time. Future research could benefit from a longitudinal approach, tracking changes in well-being as debt levels fluctuate. Furthermore, since subjective health was not a significant factor, future studies could explore cultural factors that may influence perceptions of health in relation to financial stress in Abu Dhabi.

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