

DOES FINANCIAL ENGAGEMENT REALLY REDUCE FINANCIAL ANXIETY IN OLD AGE? EVIDENCE FROM A DEVELOPING COUNTRY

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Abstract

Understanding financial anxiety among older adults is increasingly important in developing countries, where formal retirement systems are often limited or absent. While financial engagement is promoted as a path to security, its psychological effects are underexplored. This study examines the link between financial engagement and financial anxiety in Bangladesh, a country experiencing rapid digital financial growth amid limited social protection. Using nationally representative data from the World Bank's Global Findex 2022, we construct a financial engagement index based on six financial behaviors. Ordered logistic regression models show a positive and significant relationship between financial engagement and financial anxiety related to aging, medical costs, and education expenses. Contrary to expectations, more engaged individuals report greater financial anxiety, suggesting that engagement may increase awareness of financial risks. The findings highlight the need for inclusion strategies that combine access to financial education, digital literacy, and long-term planning support.

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INTRODUCTION

Understanding and addressing financial anxiety among the aging population has become increasingly urgent, particularly in developing countries where formal retirement mechanisms are often absent or inadequate (Ananta et al., 2021; Martin, 2020; Owusu-Manu et al., 2021). While previous research has focused primarily on the role of financial literacy in shaping retirement preparedness and financial anxiety (Alessie et al., 2011; Kadoya et al., 2018a; Kadoya et al., 2018b), such approaches may fall short in rural and less educated contexts where assessing traditional financial literacy proves methodologically challenging. In Bangladesh, where a large share of the population resides in rural areas with limited exposure to formal financial education, there is a critical need for alternative, more contextually appropriate explanatory frameworks (Rabeta & Sumi, 2023; Jakaria, 2022). This study introduces the concept of financial engagement, measured through behavioral indicators such as saving, borrowing, and digital transactions, as a proxy for financial competence. To our knowledge, this is the first empirical attempt to explore the link between financial engagement and financial worries among older adults in a developing country setting, offering a novel lens through which to understand economic vulnerability in later life. Importantly, while much of the existing literature refers to financial anxiety, the FINDEX survey captures financial concern through self-reported anxiety rather than clinical or persistent anxiety. Accordingly, this study adopts financial anxiety as the focal construct to more accurately reflect the nature of the outcome measured.

In Bangladesh, financial worries among older adults are not merely psychological but are deeply rooted in structural and socioeconomic realities (Rabeta & Sumi, 2023; Jakaria, 2022; Barikdar et al., 2016). A rapidly aging population, limited pension coverage, high levels of informal employment, and weak social safety nets have left many elderly individuals financially unprepared for retirement (United Nations Bangladesh, 2023; Help Age International, 2017; Barikdar et al., 2016). As life expectancy rises and traditional family-based support systems erode under the pressures of urbanization and migration, older individuals face increasing uncertainty about their financial futures (Akram & Maïtrot, 2023; Barikdar et al., 2016). While in developed countries, retirement planning is often structured through formal mechanisms such as pension schemes, health insurance, and regulated financial products, such infrastructure is either nascent or non-existent in a developing country like Bangladesh (Ingale & Paluri, 2025; Khai et al., 2024; Mitchell, 1993). According to the Global Findex data, a significant portion of the adult population lacks access to even basic financial services such as savings accounts, formal loans, or

digital payment platforms (Demirgüç-Kunt et al., 2022). This lack of financial access and engagement can leave individuals ill-equipped to manage income shocks, rising healthcare costs, or inflation in old age. Moreover, in the absence of systematic retirement planning, personal savings, insurance, and investment become critical yet often unattainable avenues for financial security. Financial worries in old age typically stem from the fear of being unable to meet essential expenses, losing independence, or becoming a burden to family members. Without the ability or habit to save regularly, invest for the long term, or manage debt effectively, individuals are more likely to experience financial stress as they age. In many cases, these anxieties are not only present among the elderly but begin to form much earlier in life due to inadequate financial preparation and limited engagement with the financial system (Kadoya et al., 2018a; Lusardi & Mitchell, 2007). Therefore, the issue of financial anxiety is both related to and a symptom of deeper structural deficiencies in financial inclusion and planning culture.

Financial engagement, broadly defined as the use of and interaction with formal and informal financial services such as having a bank account, using mobile money, saving, borrowing, and making digital payments serves in this study as a practical and observable indicator of how individuals participate in the financial system. Rather than advancing a stand-alone theoretical model, this study treats financial engagement as an empirically measurable construct that reflects realized financial behavior under existing institutional constraints. Prior literature conceptualizes financial engagement as encompassing both access to and the ability to use financial services (Demirguc-Kunt et al., 2018), making it a broader notion than financial literacy alone. While financial literacy focuses on knowledge and understanding, financial engagement captures applied behavior and day-to-day decision-making, a distinction that is particularly relevant in low-resource settings where formal financial education is limited but informal and experiential financial practices are common. The Behavioral Life-Cycle Hypothesis (Shefrin & Thaler, 1988) and Sen's Capability Approach (Sen, 1999) contextualize why engagement may matter although this study does not formally test these theories. Instead, they provide interpretive motivation for why observed financial behaviors may be linked to perceptions of preparedness, control, and anxiety in later life. In this sense, financial engagement is used not as a theoretical construct per se, but as an empirically grounded proxy for meaningful participation in the financial system.

Consistent with this empirical orientation, the study does not assume a priori that financial engagement necessarily reduces financial anxiety in old age,

particularly in developing-country contexts. In settings characterized by limited pension coverage, widespread informality, and weak social protection, engagement with financial services may simultaneously increase awareness of financial risks and constraints. Prior research from developing economies suggests that low engagement is often associated with limited saving, poor retirement preparedness, and vulnerability to shocks (Demirgüç-Kunt et al., 2018; Lusardi & Mitchell, 2014), but it also shows that engagement does not automatically translate into security when institutional protections are thin and incomes are volatile (HelpAge International, 2017). Therefore, rather than positing a strong theoretical prediction, this study treats the direction and magnitude of the relationship between financial engagement and financial anxiety as an open empirical question. Behavioral Life-Cycle arguments regarding present bias and under-saving (Shefrin & Thaler, 1988) and Sen's emphasis on the conversion of access into effective functioning (Sen, 1999) help interpret why engagement may or may not alleviate anxiety, but they are not imposed as testable structural pathways. This approach is especially appropriate in informal economies such as Bangladesh, where engagement may reflect necessity, exposure, or constraint rather than deliberate long-term planning.

Accordingly, the primary objective of this study is to examine whether financial engagement is associated with financial anxiety related to old age in Bangladesh. Rather than advancing a classical theory-driven framework with predefined mediators or moderators, we conduct an empirical test using behavior-based indicators from the Global Findex dataset, including account ownership, saving behavior, borrowing patterns, and digital payment usage. The central empirical hypothesis guiding the analysis is stated parsimoniously: Financial engagement is significantly associated with financial anxiety in old age, though the direction of this association is determined empirically rather than theoretically imposed. By focusing on observable financial behaviors rather than literacy scores, the study contributes to the literature in three ways. First, it reframes financial engagement as an empirical construct suited to low-literacy, high-informality contexts. Second, it provides evidence from Bangladesh, a setting where the assumption that greater engagement necessarily reduces anxiety may not hold. Third, it offers policy-relevant insights by demonstrating that expanding access alone may be insufficient to improve subjective financial security among older adults.

LITERATURE REVIEW

Bangladesh's financial system is shaped by a fragmented institutional structure characterized by limited pension coverage, widespread labor informality, rapid but uneven digital financial service expansion, and

modest social protection programs. These structural features critically influence the financial resilience of older adults and provide essential context for understanding persistent financial anxiety in later life. At the same time, broader scholarship on financial engagement, financial anxiety in aging, and the psychological outcomes of financial inclusion in low- and middle-income countries (LMICs) offers important conceptual insights into how engagement with financial systems interacts with perceived vulnerability. Integrating these strands of literature is crucial for motivating the empirical setting of Bangladesh and for interpreting whether financial engagement truly alleviates financial anxiety among older adults.

BANGLADESH'S FINANCIAL SYSTEM ARCHITECTURE AND FINANCIAL RESILIENCE IN OLDER AGE

Bangladesh's formal financial system provides limited protection against old-age income insecurity. Pension arrangements remain highly segmented, with coverage concentrated among public-sector employees and a narrow segment of formal private-sector workers. Evidence shows that provident fund schemes in Bangladesh are institution-specific and exclude the vast majority of workers who spend their working lives in informal employment (Saha, 2025). The absence of a unified pension framework further entrenches inequality, as highlighted in *Universal Pension Scheme: Challenges in Bangladesh*, which documents wide variation in governance, contribution rules, and benefit formulas across existing schemes. As a result, access to retirement income protection is determined more by occupational status than by need.

For most older Bangladeshis, retirement does not entail withdrawal from economic activity. Instead, financial survival in later life depends heavily on family transfers, co-residence, and informal support networks. While such arrangements are culturally embedded, the study of Rajib et al. (2023) suggests that these traditional systems are under strain due to urbanization, migration, and declining household size. These demographic and social transitions weaken intergenerational support, increasing financial uncertainty for older adults.

Labor market informality further compounds vulnerability in old age. Informal employment dominates Bangladesh's economy, depriving workers of access to contributory pensions, formal savings instruments, and insurance mechanisms. Empirical studies show that many older adults continue working out of necessity rather than choice, often in low-productivity and physically demanding activities (Yeasmin, 2024). Informal savings mechanisms such as livestock, jewelry, land holdings, and rotating savings associations serve as substitutes for formal financial products but expose

households to significant risk. Findings from Yeasmin (2024) reveal that health shocks and out-of-pocket medical expenditures frequently trigger asset depletion, reduced food consumption, and debt accumulation. These patterns underscore how informality constrains long-term financial resilience and amplifies susceptibility to shocks in later life.

Non-contributory social protection programs partially mitigate these vulnerabilities. The Old Age Allowance (OAA) program has been shown to improve basic consumption, access to medicine, and perceived autonomy among recipients. Studies of Haque et al. (2023) and Kulsum (2024) document positive effects on material well-being and social standing within households. However, benefit levels remain modest relative to rising living and healthcare costs. Alam (2023) highlights persistent challenges related to targeting inefficiencies, administrative delays, and governance weaknesses, which limit coverage and exclude many eligible older adults. Consequently, social protection reduces hardship but does not eliminate financial insecurity.

Digital financial services have rapidly expanded in Bangladesh, transforming payment systems and enabling digital delivery of government transfers. While digitalization promises greater efficiency and inclusion, its benefits for older adults are uneven. Evidence from Faeique et al. (2024) indicates that many older users lack digital and financial literacy, rely on intermediaries to operate accounts, and face heightened risks of fraud or misuse. Limited mobile phone ownership and unfamiliar interfaces further constrain effective use. As a result, digital financial inclusion may increase exposure to financial systems without necessarily enhancing financial security for older populations.

The introduction of the Universal Pension Scheme in 2023 represents a major policy initiative aimed at extending coverage to informal workers. However, adoption remains limited. Basak et al. (2024) and Faeique et al. (2024) identify affordability concerns, income volatility, low awareness, and mistrust of government institutions as significant barriers. Fiscal sustainability also poses challenges, as highlighted by Medina (2018). Together, these studies suggest that while pension reform holds promise, structural and behavioral constraints continue to undermine old-age financial security.

Taken together, Bangladesh's financial architecture places older adults in a precarious position. Weak pension coverage, persistent informality, rising healthcare costs, limited social assistance, and uneven digital inclusion collectively shape an environment where financial resilience is fragile. In such a context, engagement with financial systems may increase awareness of risks without providing adequate protection, creating fertile ground for financial anxiety in old age.

FINANCIAL ENGAGEMENT AS BEHAVIOR, ACCESS, AND CAPABILITY

Financial engagement is not a singular concept but encompasses multiple dimensions that shape how individuals interact with financial systems. Behavioral engagement refers to actual financial actions, such as managing accounts, saving, borrowing, and making payments. Gerontological research emphasizes behavioral indicators as more accurate reflections of real-world financial functioning than knowledge-based measures alone. Gerstenecker et al. (2018) and Wild et al. (2022) demonstrate that performance-based assessments capture functional competence more effectively, while Hong (2023) links behavioral engagement to health outcomes in later life.

Access represents another critical dimension, encompassing physical proximity to financial institutions, digital infrastructure, affordability, and institutional inclusivity. Even when individuals possess the capability to manage finances, unequal access can constrain engagement. Research on financial technology support for older adults highlights how access barriers intersect with mobility limitations, disability, and digital divides. In LMIC contexts, such as Bangladesh, access disparities often mirror broader socioeconomic inequalities, limiting the potential benefits of formal inclusion.

Capability includes financial knowledge, cognitive functioning, skills, judgment, and confidence. Aging is frequently accompanied by declines in numeracy, executive functioning, and decision-making capacity, which can compromise financial management. Lichtenberg et al. (2018) emphasize that financial capacity in older age is shaped by complex interactions between cognitive health and environmental demands. Digital capability has become increasingly salient, as technological anxiety and unfamiliarity inhibit adoption of mobile financial services (Han & Ko, 2025).

These dimensions are deeply interdependent. Limited capability reduces the benefits of access, restricted access limits opportunities for behavioral engagement, and engagement itself may expose underlying capability deficits. In rapidly digitizing LMIC contexts, this interaction is particularly pronounced. Yet much of the existing literature treats financial engagement narrowly, often focusing on access or literacy in isolation. This gap is especially evident in studies of older adults in developing countries, where integrated, multidimensional frameworks remain rare.

FINANCIAL ANXIETY AND ANXIETY IN AGING

Financial anxiety in later life reflects emotional, cognitive, and behavioral responses to perceived financial vulnerability. It encompasses persistent anxiety, stress, avoidance of financial decision-making, and diminished confidence. Multiple validated instruments

capture different facets of this construct. The Adviser Anxiety Scale identifies anxiety related to seeking financial advice and predicts avoidance behavior among older adults (van Dalen et al., 2017). The Psychological Inventory of Financial Scarcity captures rumination and scarcity-driven anxiety (van Dijk et al., 2022), while the Financial Distress Index links emotional stress to financial strain and money attitudes (Fenton-O’Creedy & Furnham, 2021). Perceived financial vulnerability measures are associated with depression, cognitive impairment, and functional difficulties in later life (Lichtenberg et al., 2020). Research consistently shows that financial anxiety is shaped by both objective constraints and subjective perceptions. Lower income, limited education, mistrust of institutions, and cognitive decline increase vulnerability to financial anxiety (van Dalen et al., 2017; Lichtenberg et al., 2020). Importantly, financial anxiety can itself alter behavior, leading to avoidance of financial engagement, reduced planning, and poorer long-term outcomes (Wild et al., 2022). This bidirectional relationship complicates assumptions that increased engagement automatically alleviates anxiety.

Measurement challenges are particularly acute in LMIC contexts. Self-reported measures may conflate financial anxiety with cognitive impairment or digital anxiety, especially among older adults with limited literacy or exposure to technology. Earl et al. (2015) argue for incorporating performance-based assessments to better distinguish emotional distress from functional limitations. However, no widely adopted framework integrates financial, cognitive, and digital domains, leaving a significant gap in aging research.

PSYCHOLOGICAL OUTCOMES OF FINANCIAL INCLUSION IN LMICS

A growing body of LMIC research examines whether financial inclusion improves psychological well-being, but findings remain mixed. Meta-analytic evidence suggests modest reductions in depression and anxiety following inclusion interventions, including cash transfers and expanded access to financial services (Aubrey et al., 2022; Xin et al., 2023). Proposed mechanisms include smoother consumption, enhanced coping capacity, and reduced uncertainty. However, other studies report heterogeneous or even adverse effects. Microfinance participation has been linked to increased stress due to repayment pressures and unmet expectations (Buragohain, 2023). Systematic reviews of empowerment-oriented financial interventions highlight uneven psychological outcomes and limited durability over time. Xin et al. (2023) show that psychological benefits often attenuate, raising questions about long-term effectiveness.

Notably, older adults are largely overlooked in this literature. Few LMIC studies disaggregate psychological outcomes by age, and even fewer incorporate

measures of cognitive functioning, digital capability, or real-world financial behavior. This omission limits understanding of whether financial inclusion meaningfully reduces financial anxiety for older populations, particularly in contexts characterized by rapid digitalization and weak social protection.

RESEARCH GAP AND CONTRIBUTION

The reviewed literature reveals a critical gap at the intersection of financial engagement, financial anxiety, and aging in developing countries. In Bangladesh, older adults navigate a fragmented financial system marked by weak pension coverage, pervasive informality, limited social protection, and uneven digital inclusion. While financial engagement is often promoted as a pathway to resilience, existing evidence suggests that engagement may also heighten awareness of financial risk without providing adequate buffers. At the same time, global research demonstrates that financial anxiety in old age is shaped not only by access but by behavioral engagement, capability, cognitive vulnerability, and institutional trust.

Despite this, few studies empirically examine whether financial engagement actually reduces financial anxiety among older adults in LMIC contexts. Existing research tends to focus on access or inclusion outcomes, overlooks aging-related cognitive and psychological dimensions, and rarely integrates behavioral measures of engagement. Consequently, it remains unclear whether greater financial engagement alleviates or exacerbates financial anxiety in later life. This study directly addresses this gap by asking: Does financial engagement really reduce financial anxiety and anxiety in old age? Using evidence from a developing country context, it contributes to the literature by empirically examining the relationship between multidimensional financial engagement and financial anxiety among older adults, thereby challenging simplistic assumptions about inclusion and well-being in aging populations.

METHODOLOGY

DATA

This study draws on the 2022 Global Financial Inclusion (FINDEX) Database for Bangladesh, developed by the World Bank in collaboration with Gallup, Inc. The FINDEX dataset is a flagship global source of data on how individuals around the world access and use financial services. Since its inception in 2011, FINDEX has provided cross-country, time-consistent micro-level data every three years, enabling comparative analysis of financial inclusion and behavior across countries and over time. For the 2022 round, data collection in Bangladesh was conducted through face-to-face interviews using a nationally representative sample of adults aged

15 and older. The sample was drawn using a stratified multi-stage probability sampling technique, designed to ensure representativeness across key demographic and geographic characteristics, including gender, age, education level, urban-rural residence, and income quintile. The stratification framework ensures that the data accurately reflect the national population distribution, which strengthens the generalizability of any findings derived from the dataset.

The survey was administered by trained interviewers using standardized instruments, ensuring comparability with other countries in the FINDEX database. Data quality protocols, including questionnaire pre-testing, interviewer training, and real-time quality checks, were employed to enhance reliability and minimize bias. Gallup's World Poll methodology served as the backbone of the fieldwork design, offering consistency with global FINDEX implementation standards. Although the FINDEX data are cross-sectional in nature and thus limited in establishing causal relationships, they provide a robust snapshot of financial behaviors, access, and attitudes at the household and individual level. The public availability of FINDEX microdata enables researchers and policymakers to explore pressing questions related to financial inclusion, economic resilience, and development outcomes.

VARIABLES AND MEASUREMENT

This study investigates the relationship between financial engagement and financial worries about old age using individual-level data from the World Bank FINDEX 2022 Bangladesh microdata. The variables used in the analysis are grouped into three categories: the dependent variable, the key independent variable, and a set of control variables that account for demographic and socioeconomic characteristics.

DEPENDENT VARIABLE

The outcome of interest is financial anxiety about old age, measured as an ordinal variable that captures the degree of concern individuals have about their financial future. The variable serves as a behavioral and psychological indicator of financial vulnerability, incorporating both objective constraints and subjective perceptions of future financial well-being. Based on responses to a self-assessment question, this variable is coded as follows: 1 = Not worried at all; 2 = Somewhat worried; and 3 = Very worried.

This ascending scale reflects increasing levels of perceived financial insecurity in old age. By using an ordinal structure, the analysis is able to capture meaningful distinctions in the intensity of financial concern, rather than collapsing the responses into a binary outcome. This is particularly important in the context of developing countries like Bangladesh, where individuals often face uncertainty in retirement planning, lack of pension coverage, and irregular income streams.

INDEPENDENT VARIABLE

The key explanatory variable is financial engagement, constructed as a composite index based on six observable financial behaviors. The inclusion of variables is closely related to the study of Feghali et al. (2021), which measured financial engagement (inclusion) in terms of borrowing, savings, and payment. The variables used to measure the financial engagement index in this study include:

- Account_FI: Ownership of an account at a financial institution,
- Account_Mobile: Ownership of a mobile money account,
- Savings: Having saved any money in the past 12 months,
- Borrowings: Having borrowed money in the past 12 months,
- Digital payment: Having made or received digital payments,
- Merchant payment: Having paid a merchant using a digital method.

Each variable is binary (1 = Yes, 0 = No), and the financial engagement index is calculated as the unweighted average of these six components, resulting in a continuous score ranging from 0 to 1. This index captures the extent to which individuals interact with and utilize financial tools, offering a behavioral measure of financial capability.

CONTROL VARIABLES

To account for potential confounding effects, the analysis includes a range of control variables commonly associated with financial behavior and well-being:

- Gender: Coded as 0 for female, 1 for male,
- Age: Continuous variable measured in years,
- Education level: Categorical variable reflecting the highest level of education attained,
- Employment status: Coded as 1 if the respondent is employed, 0 otherwise,
- Urban or rural residence: Coded as 1 for urban areas and 0 for rural,
- Household income quintile: Categorical variable ranging from 1 (lowest income quintile) to 5 (highest),
- Mobile phone ownership: Coded as 1 if the respondent owns a mobile phone, reflecting access to mobile-based financial services and 0 otherwise,
- Internet access: Coded as 1 if the respondent has access to the internet, 0 otherwise.

These control variables help isolate the unique contribution of financial engagement to financial anxiety while adjusting for individual socioeconomic context.

DESCRIPTIVE STATISTICS

Table 1 presents the descriptive statistics for the variables used in the analysis, based on a sample of 1,000 respondents. The dependent variable, financial anxiety about old age, is measured on an ordinal scale

ranging from 1 (not worried at all) to 3 (very worried). The mean score is 2.415, suggesting that a large proportion of respondents experience relatively high levels of concern regarding their financial well-being in later life. The standard deviation of 0.7716 indicates moderate variability in perceived financial anxiety across the sample.

The key independent variable, financial engagement, is measured as a continuous index ranging from 0 to 1, reflecting the extent of participation in various financial activities such as saving, borrowing, and digital payments. The average score is 0.2238, with a standard deviation of 0.2211, pointing to generally low but varied engagement with financial systems.

Among demographic controls, 41.2% of respondents are male, and the average age is approximately 36.9 years, with a broad range from 15 to 90 years. Educational attainment is measured on a scale from

1 to 4, and the mean value of 1.571 suggests that most respondents have relatively low levels of formal education. Employment status shows that 42.1% of respondents are currently employed, while 74% reside in urban areas, indicating a predominantly urban sample.

The income variable, categorized into quintiles (1 = lowest, 5 = highest), has a mean of 3.001, suggesting a fairly even distribution across income levels. Access to digital tools is mixed: 76.4% of respondents own a mobile phone, highlighting widespread mobile penetration, whereas only 22% report having internet access, revealing a significant digital divide that may limit financial inclusion for many individuals.

These descriptive insights provide a foundational understanding of the sample’s demographic and financial characteristics, which are crucial for interpreting the subsequent regression results.

Table 1: Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Financial anxiety_old age	1000	2.4150	0.7716	1	3
Financial engagement	1000	0.2238	0.2211	0	1
Male	1000	0.4120	0.4924	0	1
Age	1000	36.8970	15.3422	15	90
Education	1000	1.5710	0.5208	1	3
Employed	1000	0.4210	0.4940	0	1
Urban residency	1000	0.7400	0.4389	0	1
Income Quintile	1000	3.0010	1.3946	1	5
Mobile ownership	1000	0.7640	0.4248	0	1
Internet access	1000	0.2200	0.4145	0	1

Source: Author’s own work.

Table 2 presents a cross-tabulation of financial anxiety about old age across varying levels of financial engagement. Financial engagement is measured as an index ranging from 0 (no engagement) to 1 (full engagement), reflecting individuals’ participation in formal financial services and activities. The table highlights how concern over financial well-being in later life varies by financial engagement.

Among respondents with no financial engagement (index = 0), 85 individuals (20.6%) reported being very worried, and 99 (24.0%) were somewhat worried. Despite this, a majority, 229 respondents (55.4%), indicated they were not worried, suggesting mixed perceptions of financial security even among the unengaged. As financial engagement increases, the proportion of individuals reporting lower levels of financial anxiety tends to rise. For instance, at an engagement level of 0.3333, 159 out of 260 respondents (61.2%) were not worried, compared to only 36 (13.8%) who were very worried. Similarly, at an engagement level of 0.5, 65.6% of respondents reported being not worried, while just

15.0% were very worried. This trend continues across higher engagement levels. At 0.6667, over half of respondents were not worried (55.1%), while the very worried group comprised less than a quarter (24.5%). At the highest levels of engagement (0.833 and 1), financial anxiety is almost nonexistent, virtually all individuals in these categories reported no concern, although the number of respondents in these groups is small.

Although the cross tabulation shows variation in financial anxiety across engagement levels, it does not reveal a uniformly protective pattern of financial engagement. In particular, a nontrivial share of financially engaged individuals continue to report being somewhat or very worried, indicating that engagement does not eliminate concern about old age finances. This descriptive evidence is consistent with the regression results, which show that financial engagement is positively associated with financial anxiety once socioeconomic characteristics are controlled for. However, the Pearson Chi square test indicates that the bivariate associa-

tion is not statistically significant, suggesting that the descriptive relationship is heterogeneous and should be interpreted with caution. The Chi-square statistic is 11.33 with 12 degrees of freedom and a p-value of 0.501, indicating that the observed differences in financial anxiety across engagement levels could be due to

random variation. Thus, while the cross-tabulation hints at a possible inverse relationship between financial engagement and financial anxiety, the lack of statistical significance cautions against drawing definitive conclusions based on this bivariate association alone.

Table 2: Financial anxiety about old age classified by financial engagement

Financial engagement	Financial anxiety about old age			Total
	Very worried	Somewhat worried	Not worried	
0.0000	85	99	229	413
0.1667	18	26	67	111
0.3333	36	65	159	260
0.5000	24	31	105	160
0.6667	12	10	27	49
0.8333	1	2	3	6
1.0000	0	0	1	1
Total	176	233	591	1000

Chi squared = 11.3317 (Pr. = 0.507)

Source: Author's own work.

METHODS

This study investigates the association between individuals' financial anxiety about life in old age and financial engagement. The dependent variable, financial anxiety, is measured on an ordinal scale, reflecting increasing levels of concern (e.g., "not worried," "somewhat worried," and "very worried"). Because the dependent variable is ordered but not continuous, a binary logistic regression model would be inappropriate, as it would discard valuable information about the rank of responses. Instead, this study employs an ordered logistic regression model (also known as the proportional odds model), which is more suitable for outcomes with a natural ordering and more than two categories.

The ordered logit model estimates the probability that a respondent falls at or below a particular threshold of financial anxiety. It assumes that the relationship between the independent variables and the odds of being in a higher versus lower category is consistent across all thresholds - this is known as the proportional odds assumption. The model does not assume equal spacing between the outcome categories, making it ideal for attitudinal or self-reported measures such as perceived financial anxiety.

The general form of the model is specified as follows:

$$\text{Logit} \{P(Y_i \leq j)\} = \theta_j - (\beta_1 \text{Financial engagement}_i + \beta_2 \text{Male}_i + \beta_3 \text{Age}_i + \beta_4 \text{Education}_i + \beta_5 \text{Employed}_i + \beta_6 \text{Urban}_i + \beta_7 \text{Income}_i + \beta_8 \text{Mobile}_i + \beta_9 \text{Internet access}_i) + \varepsilon_i$$

Where, Y_i is the ordered dependent variable indicating the level of financial anxiety for respondent i , j indexes the cut points separating the ordered categories, θ_j are the estimated thresholds (intercepts) for each cumulative logit, Financial engagement is the financial engagement index, Gender_{*i*}, Age_{*i*}, Education_{*i*}, Employed_{*i*}, Urban_{*i*}, Income_{*i*}, Mobile_{*i*}, Internet_{*i*} are control variables representing key demographic and socioeconomic characteristics, β_1 through β_9 are coefficients to be estimated.

RESULTS

Table 3 presents the results of an ordered logistic regression analysis examining the relationship between financial engagement and financial anxiety about old age. The dependent variable is ordinal, where higher values indicate greater levels of financial anxiety. The model includes a range of demographic and socioeconomic control variables, and the results provide insight into how these factors influence perceptions of financial security in later life.

The key finding is that financial engagement is positively and significantly associated with financial anxiety. The reported coefficient represents a log-odds estimate from the ordered logit model, indicating that individuals who are more engaged with financial services are more likely to report higher levels of concern about their financial future. While this result may appear counterintuitive, it likely reflects increased awareness of long-term financial risks among those who are financially active, rather than a lack of security per se. We

interpret this as an association rather than a causal effect.

Among the control variables, gender shows a strong and significant effect. The negative coefficient for female respondents indicates that women are significantly more likely than men to express financial anxiety, even after controlling for other variables. Education is also negatively associated with financial anxiety, implying that individuals with higher educational attainment tend to feel more secure about their financial future. In contrast, being employed is associated with slightly greater anxiety, possibly reflecting heightened awareness of financial responsibilities or future uncertainties despite current employment.

Income emerges as a particularly influential factor. The coefficient indicates that individuals in higher income quintiles are significantly less likely to experience financial anxiety, underscoring the importance of economic resources in shaping financial confidence. Other variables such as urban residency, mobile phone ownership, and internet access are not statistically significant, although internet access is marginally associated with lower financial anxiety.

All empirical analyses were conducted using Stata (version 17). The main specification employs an ordered logistic regression model (ologit), which is appropriate for the ordinal nature of the dependent variable measuring financial anxiety about old age. Coefficients are estimated using maximum likelihood, and robust standard errors are reported to account for potential heteroskedasticity. The cut points (/cut1 and /cut2) represent the estimated threshold parameters that separate adjacent categories of the ordered financial anxiety outcome and have no direct behavioral interpretation. Overall, the model is statistically significant (LR chi-squared = 72.41, $p < 0.01$), although the pseudo R^2 of 0.0379 indicates modest explanatory power, which is typical for models of subjective perceptions. The results underscore the complexity of the relationship between financial engagement and perceived financial security, suggesting that while engagement may increase awareness and planning, it does not necessarily correspond to lower financial anxiety in contexts where financial risks remain high or unpredictable.

Table 3: Ordered logistic regression results

Financial anxiety about old age	Coef.
Financial engagement	0.9908 (3.1800***)
Gender	-0.7039 (-4.6300***)
Age	0.0066 (1.4000)
Education	-0.2566 (-1.8300*)
Employed	0.2509 (1.6900*)
Urban residency	-0.1284 (-0.8700)
Income Quintile	-0.2450 (-5.1200***)
Mobile ownership	0.2200 (1.3500)
Internet access	-0.2758 (-1.6200)
/cut1	-2.4924
/cut2	-1.2490
Obs.	1000
LR Chi squared	72.4100***
Pseudo R2	0.0379
Log likelihood	-919.7996

Notes: Coefficients are log-odds from an ordered logistic regression model. Higher values of the dependent variable indicate greater financial anxiety about old age. Cut 1 and Cut 2 are threshold parameters separating the ordered outcome categories. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Z-values are in parentheses

Source: Author's own work.

ROBUSTNESS CHECK

To verify the consistency of our main findings, we conducted additional ordered logistic regression analyses using two alternative measures of financial anxiety: concerns about future medical costs and concerns about education expenses. These domains represent major components of long-term financial anxiety, particularly in aging and family-oriented contexts.

In both models, financial engagement remains a positive and statistically significant predictor of financial anxiety, confirming the robustness of the original results. Specifically, the coefficient for financial engagement in the model on medical cost concerns and education-related worries is positively significant. These results reinforce the pattern that individuals who are more engaged with financial products tend to report

higher levels of concern about their financial future, likely due to greater awareness of potential financial vulnerabilities.

Other covariates also display consistent trends. Female respondents continue to exhibit higher levels of financial anxiety across both models, while higher income remains strongly associated with lower financial anxiety. The models are statistically significant overall

(LR $\chi^2 = 77.42$ and 65.06 , respectively), though with modest pseudo R^2 values (0.0455 and 0.0312), reflecting the multifaceted nature of financial anxiety.

These findings strengthen confidence in the primary conclusion: financial engagement, while a marker of proactive behavior, may also heighten financial concern by increasing individuals' awareness of future uncertainties and systemic risks.

Table 4. Ordered logistic regression results for financial anxiety about medical costs and education

Variable	Financial anxiety about medical costs	Financial anxiety about education
Financial engagement	1.0826 (3.2800***)	0.6887 (2.3900**)
Gender	-0.7592 (-4.7400***)	-0.5678 (-3.9600***)
Age	0.0037 (0.7400)	-0.0092 (-2.0900**)
Education	-0.1287 (-0.8600)	-0.0710 (-0.5400)
Employed	0.0595 (0.3800)	-0.0096 (-0.0700)
Urban residency	0.2764 (1.8000*)	0.2259 (1.6400)
Income Quintile	-0.3177 (-6.1400***)	-0.2606 (-5.7300***)
Mobile ownership	0.2408 (1.3900)	-0.0045 (-0.0300)
Internet access	-0.1614 (0.9000)	0.0965 (0.5800)
/cut1	-2.8818	-2.0130
/cut2	-1.4719	-1.0623
Obs.	1000	1000
LR Chi squared	77.4200***	65.0600***
Pseudo R2	0.0455	0.0312
Log likelihood	-811.7034	-1011.1597

Notes: Coefficients are log-odds from an ordered logistic regression model. Higher values of the dependent variable indicate greater financial anxiety about old age. Cut 1 and Cut 2 are threshold parameters separating the ordered outcome categories. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Z-values are in parentheses

Source: Author's own work.

DISCUSSION

This study set out to examine the relationship between financial engagement and financial anxiety about old age in the context of Bangladesh. Using an ordered logistic regression model, the analysis revealed several important findings that contribute to our understanding of how behavioral financial participation and sociodemographic factors influence perceptions of financial security in later life. These findings are best understood when situated within Bangladesh's institutional context of weak pension coverage, widespread informality, and limited social protection, as discussed in the literature review.

Contrary to prevailing theoretical expectations, the findings reveal that higher financial engagement is associated with greater financial anxiety, rather than reduced anxiety. Individuals who actively participate in financial activities such as saving, borrowing, and making digital payments report higher levels of concern about their financial future. This result challenges the dominant view that financial engagement enhances

resilience against economic shocks, supports retirement planning, and promotes precautionary savings (Demirgüç-Kunt et al., 2018; Lusardi & Mitchell, 2014). It also stands in contrast to previous research suggesting that financial knowledge and literacy can alleviate anxiety about aging and financial insufficiency (Kadoya et al., 2018a; Kadoya et al., 2018b). In Bangladesh, however, financial engagement occurs in an environment where formal retirement systems are weak and long-term financial risks remain largely uninsured, which helps explain why engagement may not translate into reassurance.

One possible explanation for this apparent paradox is that greater financial engagement leads to heightened awareness of long-term financial risks and systemic inadequacies. For instance, access to credit, often seen as a tool for economic empowerment, may instead result in overborrowing or indebtedness, particularly when financial literacy is limited or repayment terms are poorly understood (Karlan et al., 2016; Demirgüç-Kunt et al., 2017). In such cases, financial

products meant to improve stability might actually increase vulnerability and anxiety. Moreover, in contexts where viable investment options for old-age security are lacking, engagement in formal financial systems may expose the inadequacy of existing retirement pathways. For low-income individuals, financial engagement can also reveal the harsh reality that limited or irregular earnings constrain their ability to save meaningfully. Consistent with behavioral life-cycle arguments, greater salience of future needs in the absence of sufficient buffers may intensify psychological discomfort rather than reduce it. Ironically, higher engagement may heighten rather than reduce anxiety by making individuals more acutely aware of future financial needs they may be unable to meet. In settings like Bangladesh, where formal retirement systems are weak and social protection is limited (Ingale & Paluri, 2025; Mitchell, 1993), this awareness can be especially distressing. Rather than offering reassurance, financial engagement may thus intensify concern by exposing the fragility of one's economic position and the absence of sufficient institutional safeguards.

To assess the robustness of this finding, we extended the analysis to include two additional domains of financial anxiety: concerns about future medical costs and the affordability of children's education. In both models, financial engagement remained a significant and positive predictor of financial anxiety, reinforcing the conclusion that engagement can heighten sensitivity to potential financial vulnerabilities. This pattern is consistent with Bangladesh's reliance on out-of-pocket health spending and household-based financing of education, where individuals bear primary responsibility for managing long-term risks. These results suggest that the observed relationship is not unique to anxiety about life in old age but extends across different types of long-term financial concerns.

The analysis also shows that income is a strong and consistent predictor of reduced financial anxiety. Respondents in higher income quintiles are significantly less likely to report concern about old age finances, reaffirming the role of economic resources as a buffer against financial insecurity. Education likewise appears to reduce financial anxiety, likely by improving financial understanding, decision-making ability, and future planning. This finding highlights an important distinction: financial engagement without adequate income or capability may raise awareness of risk without providing the means to mitigate it. These findings are aligned with previous literature that links human capital accumulation to better financial outcomes and psychological well-being (Ryu and Fan, 2022; Deloitte, 2024).

Interestingly, female respondents reported significantly higher levels of financial anxiety than males. This

is consistent with some studies suggesting that women are more financially vulnerable and often less prepared for retirement (Lusardi & Mitchell, 2008). One possible explanation is that, in the Bangladeshi context, women may experience greater perceived insecurity regarding long-term financial stability due to lower labor market participation, limited access to formal financial resources, and greater reliance on household or family support in later life. Gendered expectations around caregiving, dependency, and old-age support may therefore shape how financial risks are perceived and internalized. Cultural norms and gender roles may also influence how financial concerns are internalized and expressed (Shohel et al., 2021).

The role of employment status also warrants attention. The positive and weakly significant association between being employed and higher financial anxiety may suggest that income from employment alone does not guarantee future financial stability. Rather, it may heighten awareness of future uncertainty, particularly if employment is informal or lacks retirement benefits. In Bangladesh's labor market, where informality is widespread and employment rarely includes pension entitlements, engagement with work may increase awareness of future insecurity rather than reduce it. This is consistent with the psychological explanation that self-awareness often leads to self-consciousness, which can prevent individuals from showing positive behavior and attitude (Well, 2021). In contrast, urban residency, mobile phone ownership, and internet access were not significant predictors, suggesting that access to infrastructure alone may be insufficient to alleviate financial anxiety without corresponding improvements in income, planning, or financial education.

In sum, this study underscores the complexity of the relationship between financial behavior and psychological outcomes. It calls for a more nuanced approach to financial inclusion, one that acknowledges that participation in the financial system, while important, does not by itself guarantee peace of mind in old age. Comprehensive strategies that integrate financial access, capability, and structural support are essential for fostering long-term financial well-being. From a policy perspective, these findings suggest that financial engagement initiatives in Bangladesh should be complemented by stronger pension systems, age-appropriate financial products, consumer protection, and integration with social safety nets, so that engagement can be translated into genuine financial security rather than heightened anxiety.

Despite its contributions, this study is subject to several limitations. First, the analysis is based on cross-sectional data, which restricts our ability to infer causal relationships between financial engagement and financial anxiety. While the associations observed are robust

across different dimensions of financial concern, they do not establish directionality or account for potential reverse causality. Second, due to limitations in the available dataset, we were unable to directly measure financial literacy in terms of knowledge, behavior, or attitude, three core dimensions emphasized in the literature. Instead, financial engagement was used as a behavioral proxy, which, while informative, may not fully capture the cognitive or motivational aspects of financial capability. These limitations underscore the need for future research using longitudinal designs and richer datasets that include standardized financial literacy metrics to better understand the mechanisms linking engagement with financial anxiety.

CONCLUSIONS

This study examined the relationship between financial engagement and financial anxiety in old age within the context of Bangladesh, using nationally representative data. Contrary to conventional expectations, the findings reveal a positive association between financial engagement and financial anxiety, indicating that individuals who actively use financial services are more likely to express concern about their financial future. This pattern persists across various domains, including worries about healthcare costs and education expenses, suggesting that increased interaction with financial systems may heighten individuals' awareness of their financial vulnerabilities rather than ease them. One possible explanation is that financial

engagement exposes people to the complexities and uncertainties of long-term planning, especially in contexts where social protection is limited, income is irregular, and formal retirement systems are weak. Rather than offering reassurance, engagement may make the limitations of personal savings and institutional support more visible, intensifying concern about financial insecurity in later life.

The finding that financial engagement is positively, rather than negatively, associated with financial anxiety in old age has important policy implications. It suggests that simply promoting financial access is insufficient and may even be counterproductive without adequate support. Financial engagement strategies must be paired with practical tools such as planning aids and personalized guidance to help individuals translate awareness into action. Financial literacy programs should directly address the risks and uncertainties that older adults fear, offering strategies for managing healthcare costs, inflation, and late-life debt. Moreover, financial products for older populations should prioritize simplicity and stability over complexity and risk. Finally, these efforts must be embedded within a broader system of social protection, reinforcing the idea that financial services complement, but do not replace, strong public safety nets. By combining access, education, emotional support, and policy safeguards, financial engagement can become a pathway to resilience rather than a source of anxiety.

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