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Empowering Indonesian Millennials: The Role of Financial Literacy, Goal Clarity, and Risk Tolerance in Retirement Savings

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Correspondence: Anastasia Njo (anas@petra.ac.id)**Received:** 27 October 2024 | **Revised:** 10 June 2025 | **Accepted:** 22 July 2025**Keywords:** financial literacy | financial risk tolerance | millennial retirement planning | retirement goal clarity | retirement saving behavior

ABSTRACT

The millennial generation in Indonesia may struggle with retirement if they do not begin preparing their retirement funds early. This study aims to explore the impact of financial literacy, retirement goal clarity, and financial risk tolerance on the retirement saving behavior of millennials. Data was collected through an online questionnaire using purposive sampling targeting employed Indonesian millennials, resulting in 212 respondents. Hypothesis testing was conducted using partial least square-structural equation modeling with the Smart-PLS 4.0 software. The results of this study reveal that subjective financial literacy significantly influences retirement saving behavior, both directly and through the partial mediation of retirement goal clarity. In contrast, objective financial literacy and financial risk tolerance do not exhibit a significant influence on retirement saving behavior. The findings underscore the importance of boosting confidence in financial knowledge and the clarity of retirement goals to encourage better saving habits among millennials. Setting clear retirement goals is crucial for driving saving behavior, even when potential risks are factored in. Millennials are approaching retirement age, making it essential to assess their readiness and preparedness for retirement.

JEL Classification: G4, G5

1 | Introduction

Indonesia is currently experiencing a demographic bonus between 2020 and 2030, with the productive age group (15–64 years) comprising 70% of the total population (Ramadhan and Prabowo 2023). This productive age group tends to have higher income levels, providing opportunities for saving or investment. However, this situation also poses a potential risk of a demographic disaster in the future if adequate retirement preparation is not undertaken (Graham-Harrison and McCurry 2023). Millennials, who constitute the majority of the productive-age population (Badan Pusat Statistik 2021) recognize the importance of preparing for retirement, yet only 30% have started saving. This means that 70% of Indonesia's 69.38 million millennials

are unprepared for retirement, putting them at risk of financial hardship and potentially jeopardizing the nation's economy (Badan Pusat Statistik 2021; JAKPAT 2020). Individuals who fail to prepare for retirement independently will become heavily reliant on social security or state-provided pension funds, which may prove inadequate to meet their financial needs.

Building on this challenge, as the working-age population transitions into retirement, the country is likely to witness a substantial rise in the elderly population, further straining the existing pension system. This threat is further exacerbated by Indonesia's inadequate pension system, despite its establishment in 1926. Participation in pension programs remains extremely low, with only 40% of formal workers and less than 1% of informal workers

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enrolled (Yusuf et al. 2022). Many companies have either frozen employer pension funds (*Dana Pensiun Pemberi Kerja-DPPK*) or shifted from defined benefit plans (*Program Manfaat Pasti-PMP*) to defined contribution plans (*Program Iuran Pasti-PIP*) due to financial difficulties and stagnant performance (Seran et al. 2023). The total managed assets of pension funds are also alarmingly low, amounting to just 6.7% of gross domestic product (GDP), far below the standards of developed countries like Australia and Canada (Yusuf et al. 2022). The pension system, as assessed by the Global Pension Index, ranks Iceland as the top country, while Indonesia ranks 39th out of 44 countries with a score of 49.2. In comparison, Malaysia ranks 23rd with a higher score of 63.1. The assessment is based on the implementation of a three-pillar system: a state-funded basic pension for all citizens, mandatory employer pension schemes, and voluntary personal retirement savings, which together ensure optimal financial security for the entire retirement-age population (Mercer 2022).

The demographic bonus has also shifted employment patterns, including a rise in contract work or freelance jobs, which often lack adequate retirement benefits. Without adequate retirement planning, millennials risk facing significant financial difficulties in their later years (Lusardi 2003; Lusardi and Mitchell 2011a). Conversely, starting retirement planning early can greatly increase the likelihood of financial security in retirement (García Mata 2021; Ismail et al. 2020; She et al. 2023). It is therefore crucial for the government, financial service providers, and millennials themselves to understand the factors that drive retirement preparation behaviors to ensure future financial well-being (Lusardi and Mitchell 2011b).

With the increasing life expectancy and the rising number of individuals retiring with debt (van Raaij 2016; García Mata 2021), retirement preparation behavior and its underlying factors have drawn significant academic attention (Bapat 2020; Goyal et al. 2021). While most studies focus on individuals nearing retirement in developed countries (Tomar et al. 2021), further research on younger generations, particularly in Indonesia, is needed to encourage millennials for early retirement preparation, as they play a critical role in the current and future economy (Lusardi et al. 2020).

The low levels of retirement planning and preparation in Indonesia may be attributed to the population's low financial literacy (Harahap et al. 2022; OJK 2022a). Ideally, adequate financial knowledge is crucial for managing personal finances and making sound financial decisions (García Mata 2021; Klapper and Lusardi 2020; van Rooij et al. 2011), such as selecting financial products or estimating future financial needs. Financial literacy also plays a key role in long-term financial planning, including retirement (García Mata 2021; Harahap et al. 2022). In 2022, Indonesia's financial literacy index remained relatively low, with only 49.68% of the population demonstrating an understanding of basic financial concepts (OJK 2022b, 2022a). Unfortunately, financial education is rarely included in formal curricula, as is the case in many other developing countries (García Mata 2021; Klapper and Lusardi 2020; van Rooij et al. 2011). Tomar et al. (2021) suggest that in collectivist societies like Indonesia, financial attitudes and knowledge are often shaped by the social environment, particularly family dynamics. As a result, younger generations may inherit financial biases

and challenges, such as the challenges of being part of the sandwich generation and insufficient retirement planning (Türkmen and Kılıç 2022). These financial challenges contribute to financial stress, reduce savings for the future, and limit the sandwich generation's ability to achieve personal goals, including retirement planning.

While financial literacy is important, it does not fully explain retirement preparation behavior. The behavioral finance approach highlights that man's financial decisions are not always rational and optimal (van Raaij 2016), as various psychological factors also influence key financial behaviors and decisions, such as retirement saving behavior (Bapat 2020; Larisa et al. 2021). Subjective factors like biases or heuristics play a crucial role in individual decision-making (van Raaij 2016). In fact, an individual's subjective financial literacy may exceed their objective financial literacy, leading to overconfidence (Chen and Chen 2023; Pearson and Korankye 2022). Although studies show that objective financial literacy is positively associated with retirement preparation behavior (García Mata 2021; Hutabarat and Wijaya 2020; Lusardi and Mitchell 2011a, 2011b; van Rooij et al. 2011), subjective financial literacy may have a negative relationship.

Behavioral finance also frequently draws on psychological concepts like the theory of planned behavior (TPB) by Ajzen (1991). The TPB explains various individual financial behaviors, such as home buying (Njo and Sugeng 2022), investing (Raut 2020), and preparing for retirement (Larisa et al. 2021; Tomar et al. 2021). The TPB posits that behavior is driven by intention, which is determined by three factors: individual attitudes, subjective norms, and perceived behavioral control (Ajzen 1991; Anastasia et al. 2023). In retirement planning, various demographic and psychological factors can influence attitudes, norms, and perceived control (Goyal et al. 2021; Topa et al. 2018). Financial literacy can also shape an individual's views on the benefits and capabilities of preparing for retirement (García Mata 2021). Additionally, having clear retirement goals and a tolerance for financial risk can influence individual retirement saving behaviors.

Establishing clear retirement goals can help millennials achieve financial well-being in retirement (Jacobs-Lawson and Hershey 2005; Stawski et al. 2007; Yue et al. 2018). With clear retirement goals, individuals can determine how much they need to save regularly (van Rooij et al. 2011) and are motivated to work toward these goals (Stawski et al. 2007; Tomar et al. 2021). Setting goals and starting retirement planning early offer several benefits, including longer periods for fund accumulation, more diverse investment options, and easier financial management (Larisa et al. 2021).

Building on this, it is essential to consider how financial risk tolerance interacts with retirement planning, as every individual has a different level of financial risk tolerance. Those with high financial risk tolerance are more likely to choose high-risk, high-reward investments, while those with low financial risk tolerance tend to avoid volatile investment options (van Raaij 2016). Financial understanding helps individuals make more informed decisions that are commensurate with the risks involved (Larson et al. 2016; Yue et al. 2018). Bapat (2020)

indicates that financial risk tolerance can moderate the relationship between financial understanding and locus of control on financial behavior, though other studies have not found a significant effect of financial risk tolerance on retirement planning (Larisa et al. 2021).

Several prior studies have examined the factors influencing retirement saving behavior. However, there remains limited research exploring how individuals' confidence in their subjective literacy influences retirement saving behavior (Nguyen et al. 2022), compared to their actual understanding of objective financial literacy. This gap is particularly evident when considering the role of clear retirement goals and varying levels of risk tolerance among individuals. Therefore, further research is needed on millennial retirement preparation in Indonesia, given the diverse challenges and characteristics unique to this demographic. This study is essential to better understand retirement saving behavior through psychological dimensions in the context of millennials in developing countries (Goyal et al. 2021). Gaining insight into these significant factors can help the government, financial product providers, and individuals foster early retirement preparation behavior, thereby avoiding the risks of inadequate retirement preparation and its potential macroeconomic consequences (van Raaij 2016; Tomar et al. 2021).

2 | Literature Review

2.1 | Theory of Planned Behavior

Ajzen's TPB (Ajzen 1991) has been widely used by behavioral finance scholars to explain the subjective nature of human financial behavior through three key factors: attitude, which refers to beliefs about the consequences of actions; subjective norms, which represent social pressure; and perceived behavioral control, which is the belief in one's ability to control actions (Ajzen 2005; Goyal et al. 2021; Knoll 2010). TPB posits that an individual's behavior is influenced by behavioral, normative, and control beliefs, which are shaped by personal, social, and informational factors (Ajzen 2005) with psychological aspects emphasizing the attitude-behavior relationship. However, Goyal et al. (2021) found that the influence of subjective norms on financial behavior is often smaller than the impact of attitude and control factors. Therefore, this study focuses on personal factors (retirement goal clarity and financial risk tolerance) and informational factors (financial literacy), which are theorized to shape the proximal determinants of behavior within the TPB framework. Following prior conceptualizations, subjective financial literacy is treated as a precursor to perceived behavioral control, reflecting individuals' confidence in their financial decision-making ability (Shim et al. 2010; Xiao and Porto 2017). Financial risk tolerance is aligned with attitude toward behavior, as it captures individuals' disposition and evaluative stance toward engaging in financially uncertain decisions (Grable and Joo 2004). Meanwhile, retirement goal clarity is defined as the degree to which individuals have specific, actionable objectives for retirement, which is used as a proxy for behavioral intention, consistent with prior TPB-based retirement (Hershey and Mowen 2000; Stawski et al. 2007). Thus, this study adopts a

TPB-informed model where financial literacy and risk tolerance influence retirement saving behavior indirectly, through their impact on perceived behavioral control, attitudes, and intention (via goal clarity). This integration allows for a theoretically grounded explanation of how cognitive and motivational constructs shape saving behavior, even if the TPB components are not modeled discretely.

2.2 | Retirement Saving Behavior

Retirement saving behavior refers to the actions taken by individuals to save and accumulate funds in preparation for a secure and prosperous retirement (Alkhwaja and Albaity 2022). These actions may include actively purchasing financial products or investing in property (Garcia Mata 2021). Often, individuals acknowledge the importance of retirement preparation but delay taking action, considering it irrelevant at the moment (Alkhwaja and Albaity 2022; van Raaij 2016). This delay is strongly associated with age, as older individuals are more likely to prioritize retirement preparation (Kumar, Shukla, and Sharma 2019; Topa et al. 2018). As a result, those who begin saving for retirement late may face financial difficulties in retirement, such as debt or reliance on family support (Lusardi et al. 2020; Lusardi and Mitchell 2011a, 2011b; van Rooij et al. 2011). In contrast, early retirement preparation offers advantages such as optimal fund growth and a lighter savings burden (Ismail et al. 2020). Retirement preparation behavior typically begins with proper intention and planning (Bongini and Cucinelli 2019; Stawski et al. 2007). Various factors drive individuals to prepare for retirement, including demographic factors (e.g., age and gender) and psychological factors, such as their views on retirement, future perspective, locus of control, and retirement goal clarity (Kumar, Tomar, and Verma 2019; Tomar et al. 2021; Topa et al. 2018).

2.3 | Financial Literacy and Retirement Saving Behavior

Financial literacy refers to an individual's ability to process financial information and make informed financial decisions (Lusardi and Mitchell 2014). According to van Raaij (2016), while most individuals understand basic financial concepts such as compound interest and inflation, they often lack advanced financial knowledge about stocks or risk diversification (van Rooij et al. 2011). A strong level of financial literacy helps individuals engage in various financial behaviors, such as budgeting, retirement planning, or choosing investment products, which in turn improves their financial well-being and positively impacts the macroeconomic health of a country (van Raaij 2016; Klapper and Lusardi 2020). Objective financial literacy (OFL) can be passed down from family, which may inherit misconceptions, or obtained through formal education, often underrepresented in early education (Anastasia et al. 2019; García Mata 2021; Türkmen and Kılıç 2022).

The level of an individual's financial understanding directly influences their financial management decisions, including retirement planning. High financial literacy enables individuals to recognize the importance of saving and investing

for retirement (van Rooij et al. 2011). Previous research has shown that objective financial literacy encourages Indonesian career women to be more proactive in retirement planning (Larisa et al. 2021) and helps young Mexican adults avoid passive retirement funding strategies (García Mata 2021). Harahap et al. (2022) suggests that financial literacy aids individuals in recognizing alternative investment instruments, managing budgets, and mitigating risks, empowering them to prepare for retirement. Based on these findings, the following hypothesis is proposed:

H1. *Objective Financial Literacy has a positive effect on Retirement Saving Behavior.*

On the other hand, an individual's self-assessment of their financial understanding—subjective financial literacy—may differ from their actual financial abilities (Chen and Chen 2023; Lusardi and Mitchell 2014). This discrepancy can manifest as overconfidence, where a person's subjective financial literacy exceeds their objective financial literacy, often associated with high debt, poor investment performance, and a lack of financial risk understanding (Pearson and Korankye 2022). Conversely, complex economic and financial concepts can cause individuals to doubt their abilities, leading to delayed financial decisions (Riitsalu and Murakas 2019). Bapat (2020) found that subjective financial literacy influences financial management behavior through attitude mediation in young adults in India. A study by Harahap et al. (2022) on medium-scale entrepreneurs in Indonesia also demonstrated that subjective financial literacy affects retirement planning behavior. Subjective financial literacy can be viewed as a form of self-efficacy or perceived control over financial decision-making. Based on these findings, the following hypothesis is proposed:

H2. *Subjective Financial Literacy has a positive effect on Retirement Saving Behavior.*

2.4 | Retirement Goal Clarity and Retirement Saving Behavior

Goal-setting is a crucial aspect of human behavior, serving as a representation of an ideal future state that motivates individuals to devise plans and take steps to achieve it (Austin and Vancouver 1996; Beach and Mitchell 1987; Hershey et al. 2007; Neukam 2002). Retirement goal clarity (RGC) refers to how clearly an individual envisions their ideal retirement life, including setting specific savings targets, lifestyle choices, and other financial goals they wish to accomplish (Sani et al. 2022; Tomar et al. 2021; van Rooij et al. 2011).

Having a clear picture of retirement encourages individuals to engage in financial planning and save for retirement (Kumar, Tomar, and Verma 2019; Sani et al. 2022; Stawski et al. 2007). Retirement goal clarity provides direction, guidance, and feedback for one's behavior, acting as motivation and self-regulation to remain disciplined in saving (van Raaij 2016; Tomar et al. 2021). Clear goals and plans enable individuals to determine the type of investment and the amount of savings needed,

thus increasing the likelihood of accumulating higher retirement savings (Yue et al. 2018). Based on this explanation, the following hypothesis is proposed:

H3. *Retirement Goal Clarity positively influences an individual's Retirement Saving Behavior.*

Education plays a crucial role in equipping consumers with the knowledge necessary to make informed decisions, including investment decisions for retirement. Based on the level of financial knowledge an individual possesses, they are able to set clear retirement goal, such as their desired retirement age and income level during retirement. Understanding key financial concepts, such as time-value of money, interest, and inflation, enables individuals to calculate and estimate the savings and expenditure needed for retirement (Yue et al. 2018). A clear retirement goal begins with defining expectations regarding the desired quality of life during retirement (Stawski et al. 2007). Adequate financial literacy empowers individuals to better comprehend financial potentials and risks (Murari et al. 2021) and their implications for achieving financial goals (Stawski et al. 2007). This understanding thereby enables them to set and create a structured plan, specifically through retirement savings planning. From these insights, the following research hypotheses are presented:

H5. *Objective Financial Literacy positively influences an individual's Retirement Goal Clarity.*

H6. *Subjective Financial Literacy positively influences an individual's Retirement Goal Clarity.*

In summary, the literature consistently positions financial literacy, both conceptually and empirically as a foundational driver of retirement planning and goal clarity. Individuals with higher financial knowledge are more likely to engage in planning behavior because they possess the cognitive tools to set concrete goals and navigate complex retirement decisions (Larisa et al. 2021; van Rooij et al. 2011; Yue et al. 2018). Goal clarity, in turn, functions as a motivational and intentional bridge that facilitates actual saving behavior, consistent with the TPB (Ajzen 1991, 2005; van Rooij et al. 2011). Furthermore, considering the unique cognitive and motivational constraints faced by younger generations such as Millennials, it is less plausible that retirement goal clarity precedes or independently drives financial literacy. Rather, financial understanding must come first to activate planning intentions (van Raaij 2016). Taken together, these findings support a causal pathway in which financial literacy enhances retirement goal clarity functions as a mediating variable that links financial literacy to retirement saving behavior. Accordingly, the following research hypotheses are proposed:

H9. *Retirement Goal Clarity mediates the relationship between Objective Financial Literacy and Retirement Saving Behavior.*

H10. *Retirement Goal Clarity mediates the relationship between Subjective Financial Literacy and Retirement Saving Behavior.*

2.5 | Financial Risk Tolerance and Retirement Saving Behavior

Risk is a fundamental concept in behavioral finance, as individuals take on risk whenever they make financial decisions, such as taking out loans, investing, or purchasing financial products (Bapat 2020; van Raaij 2016). Psychologically, risk is a subjective construct based on an individual's interpretation, resulting in varying perceptions of risk from person to person (van Raaij 2016). Financial risk tolerance refers to the level of uncertainty an individual is willing to accept from financial decisions (Alkhawaja and Albaity 2022; Grable 2000; Larisa et al. 2021). Various factors affect financial risk tolerance, including age, education, income, and professional status (Bapat 2020; Grable 2000; Larisa et al. 2021). Cultural background and generational cohorts also shape risk preferences, with millennials, for instance, growing up in a period of financial uncertainty (Larson et al. 2016). Individuals with a high financial risk tolerance, or risk-seekers, tend to focus more on potential gains and are likely to opt for higher-risk investments, such as stocks (van Raaij 2016; Jacobs-Lawson and Hershey 2005; Nguyen et al. 2022). In contrast, risk-averse typically avoid high-risk options and choose safer investments like bonds or savings accounts (Bapat 2020; Jacobs-Lawson and Hershey 2005).

An individual's perception and preference for financial risk have been shown to influence financial decisions, such as purchasing a home (Njo and Sugeng 2022), stock investments (Kasoga 2021), or financial management (Bapat 2020). Those with high financial risk tolerance are inclined to invest in risky instruments because they focus on long-term high returns (van Raaij 2016; Larisa et al. 2021). This tendency can encourage individuals to save for retirement, as they are motivated by the potential rewards when retirement arrives (Alkhawaja and Albaity 2022). Based on this, the following research hypothesis is formulated:

H4. *Financial Risk Tolerance positively influences an individual's Retirement Saving Behavior.*

Financial risk tolerance reflects an individual's ability to handle financial risks and make investment decisions (Nguyen et al. 2022). Larson et al. (2016) argue that risk preferences and tolerance are related to one's knowledge, experience, and confidence in making decisions. Financial literacy enables individuals to understand risks and their mitigation strategies (Harahap et al. 2022; Kasoga 2021; van Rooij et al. 2011). According to Croy et al. (2010), domain knowledge was assessed by having participants self-evaluate their understanding of superannuation and various elements of share market investment. The study found that individuals with greater domain knowledge tend to exhibit higher levels of risk tolerance. Numerous studies have demonstrated the influence of financial literacy on an individual's level of financial risk tolerance (Larisa et al. 2021; Nguyen et al. 2022). From this explanation, the following research hypotheses are proposed:

H7. *Objective Financial Literacy positively influences an individual's Financial Risk Tolerance.*

H8. *Subjective Financial Literacy positively influences an individual's Financial Risk Tolerance.*

According to the OECD (2023), financial literacy remains low among young adults (aged 18–29), while individuals in the middle-age bracket (30–59) tend to demonstrate higher levels of financial knowledge. Financial literacy has been shown to enhance individuals' ability to manage unexpected expenses and financial shocks (Prakash et al. 2022). In contrast, low levels of financial literacy are often associated with poor financial planning, inefficient spending, reliance on expensive loans, and weak debt management. This factors that can impede long-term financial well-being. One key pathway through which financial literacy affects financial outcomes is via financial risk tolerance. Defined as an individual's willingness and capacity to bear financial losses and uncertainty (Beer and Wellman 2021), financial risk tolerance reflects how comfortable a person is when making financial decisions under risk. As noted by Wang and McGroarty (2022), financial risk tolerance is strongly associated with actual financial behaviors, particularly in areas such as investment decisions and long-term financial planning. Accordingly, individuals with greater financial literacy are more likely to develop higher financial risk tolerance, which in turn supports more proactive and informed financial behaviors. It is proposed that financial risk tolerance serves as a mediating variable in the relationship between financial literacy and financial behavior. Moreover, recent research increasingly distinguishes between subjective and objective financial knowledge. Subjective financial knowledge refers to an individual's self-assessed understanding or perception of their financial knowledge. Both forms of knowledge have been shown to play distinct and complementary roles in influencing financial decision-making (Nam et al. 2025). Taking into account the hypothesized influence of both subjective and objective financial literacy on financial risk tolerance, as well as the downstream effect of financial risk tolerance on retirement saving behavior. This study proposes that financial risk tolerance may mediate these relationships. The following research hypotheses are proposed:

H11. *Financial Risk Tolerance mediates the relationship between Objective Financial Literacy and Retirement Saving Behavior.*

H12. *Financial Risk Tolerance mediates the relationship between Subjective Financial Literacy and Retirement Saving Behavior.*

2.6 | Research Model

Based on the literature review and the formulated hypotheses, a conceptual framework or research model can be established, as illustrated in Figure 1 below:

3 | Research Method

This study adopts a quantitative associative method to explore the cause-and-effect relationship between exogenous and endogenous variables, aiming to establish predictive capabilities (Cooper and Schindler 2014). Table 1 displays details of exogenous variables, endogenous variables, and mediating variables. The target population comprises the millennial generation in Indonesia, born between 1981 and 1996

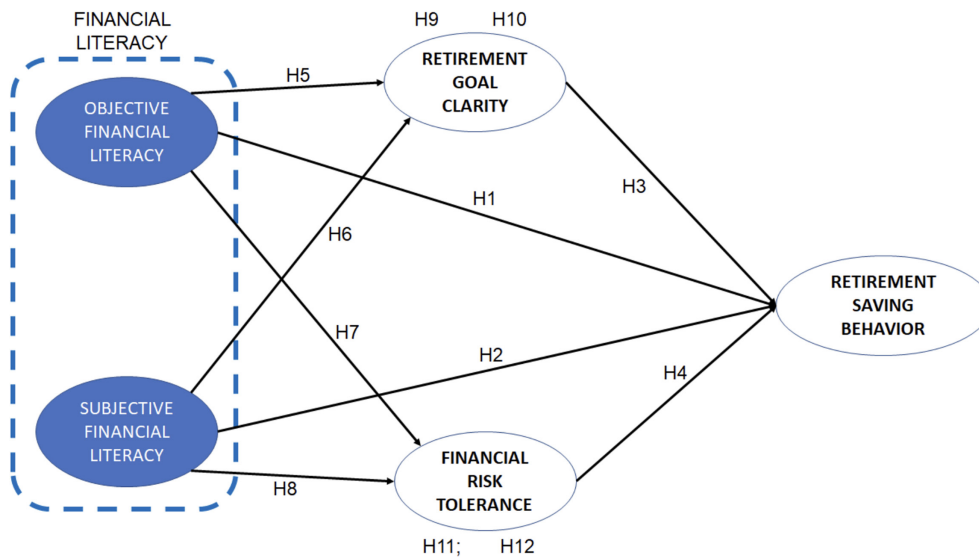


FIGURE 1 | Research model. *Source:* authors' compilation based on literature review.

TABLE 1 | Research variable and the references.

Endogenous variable			
	Retirement Saving Behavior	Alkhawaja and Albaity (2022)	Likert Scale; 1—"Strongly Disagree" and 5—"Strongly Agree."
Exogenous variables			
1.	Financial Literacy: Objective Financial Literacy	van Rooij et al. (2011)	6 multiple choice questions, correct answer is given 1-point, wrong answer is given 0 point
2.	Subjective Financial Literacy	Larson et al. (2016)	Likert Scale; 1—"Strongly Disagree" and 5—"Strongly Agree."
Mediating variables			
	Retirement Goal Clarity	Stawski et al. (2007)	Likert Scale; 1—"Strongly Disagree" and 5—"Strongly Agree."
	Financial Risk Tolerance	Larisa et al. (2021)	Likert Scale; 1—"Strongly Disagree" and 5—"Strongly Agree."

Source: Data processing by the author.

(Frey 2021). This population is known for its technological proficiency, which supports financial literacy through easy access to information (Anastasia et al. 2019; Frey 2018). The sample was selected through purposive sampling, targeting individuals who are employed and earning independent incomes. Data was collected through an online questionnaire using Microsoft Forms, with the survey period running from

August 3, 2023, to January 24, 2024. A pretest was conducted on 30 respondents to gather initial feedback on potential issues in the questionnaire.

The minimum sample size should be 10 times the maximum number of arrowheads pointing to latent variables in the PLS path model (Hair Jr. et al. 2021; Marcoulides and Chin 2013). Thus, the minimum sample size required is $8 \times 10 = 80$. Reinartz et al. (2009) suggest that the Partial Least Square-Structural Equation Modeling (PLS-SEM) method is suitable when the sample size is small, as it offers higher statistical power for complex model structures or smaller sample sizes. Hair Jr. et al. (2021) also stated that PLS-SEM is particularly suitable for exploratory research or new theory development, as it focuses on predicting the relationship between latent variables, especially in complex models involving reflective or formative indicators. This method does not rely on assumptions of normal data or control variables, making it flexible for exploring new relationships and generating applicable results.

Data analysis was conducted descriptively using the mean and standard deviation values, followed by hypothesis testing using the PLS-SEM method, executed with the SmartPLS 4.0 software. The PLS-SEM process involves two main models: the outer model, which evaluates the measurement model, and the inner model, which tests the structural model and research hypotheses (Hair et al. 2019). The testing stages include Indicator Loadings to assess item reliability by ensuring each item's loading score exceeds 0.708. Construct reliability is assessed to evaluate the reliability and consistency of the constructs, requiring Cronbach's α and Composite Reliability scores for each construct to exceed 0.70. Convergent validity assesses how consistently each construct explains the variance of its items, ensuring an average variance extracted (AVE) score above 0.5 for each construct. Discriminant Validity ensures that each construct is empirically distinct from others, as indicated by the highest Fornell-Larcker value for each variable and a heterotrait-monotrait (HTMT) ratio below 0.85. To ensure the absence of multicollinearity and maintain unbiased estimates of path coefficients, the VIF value should ideally be below 5, with a more stringent threshold being below 3.3. After the measurement

model has been validated, structural model analysis in PLS-SEM is conducted by examining the coefficient of determination (R^2), predictive power (Q^2), path coefficients, and hypothesis testing, where a hypothesis is accepted if the t -statistic > 1.96 and p values < 0.05 (Hair Jr. et al. 2021).

4 | Research Result

In this study, a total of 297 survey forms were collected, and through the purposive sampling technique, 212 respondents were found to meet the sample selection criteria (i.e., working and earning independently). The descriptive characteristics of the respondents are summarized in Table 2. The majority of respondents were between the ages of 26–34 (68.3%), with the remaining respondents aged 35–43 (31.6%). The sample was predominantly female (57.0%),

TABLE 2 | Respondent characteristics.

Demographic description	N	(%)
Age (Years)		
26–34	145	68.3%
35–43	67	31.6%
Gender		
Female	121	57.0%
Male	91	42.9%
Education level		
≤ High school/vocational school	8	3.8%
3-year diploma/bachelor's degree	143	67.4%
Master's degree/PhD	61	28.7%
Occupation		
Professional: (e.g., Doctor, Lawyer, Chef, Freelance designer, etc.)	36	16.9%
Employee/worker/laborer	129	60.8%
Entrepreneur (business owner & employer)	47	22.1%
Annual income (Rp.)		
≤ 60,000,000	15	7.1%
60,000,001–240,000,000	153	72.2%
240,000,001–480,000,000	33	15.5%
≥ 480,000,000	11	5.2%
Retirement plan		
None	35	16.5%
Provided by employer	57	26.8%
Self-provided	72	33.9%
Provided by employer and self-provided	48	22.6%

Note: US\$ 1 = Rp. 15,000.

Source: Data processing by the author.

compared to male respondents (42.9%). Regarding education, most respondents hold a 3-year Diploma or Bachelor's degree (67.4%), followed by postgraduate degrees (28.7%). A majority of the respondents are employees/workers/laborers (60.8%). In terms of annual income, most respondents earn between 60,000,001 and 240,000,000 rupiah (72.2%), while 15.5% earn between 240,000,001 and 480,000,000 rupiah. Most respondents stated that they had prepared for retirement, either from their employer (26.8%), personally (33.9%), or from both sources (22.6%), although some admitted to having no retirement preparation at all (16.5%).

The respondents' objective financial literacy scores, as shown in Figure 2, reveal that the majority fall into the medium category, with scores ranging between 4 and 5 (48.11%). Respondents with low scores (≤ 3) and high scores (6) are evenly distributed, each comprising 25.94%. This suggests that nearly half of the respondents have a moderate level of financial literacy, while a quarter have a low level and the remaining quarter have a high level.

Table 3 provides a breakdown of the percentage of correct answers for each objective financial literacy indicator. The indicator with the highest percentage of correct responses is numeracy (90.09%), followed by risk diversification (76.42%) and inflation (75.47%). Questions on compound interest (67.92%) and time value of money (69.34%) also received relatively high correct response rates. However, the indicator related to stocks/mutual funds had the lowest percentage of correct answers, at 54.72%. These findings indicate that respondents have a stronger grasp of numeracy and risk diversification concepts but are less knowledgeable about investment products like stocks and mutual funds.

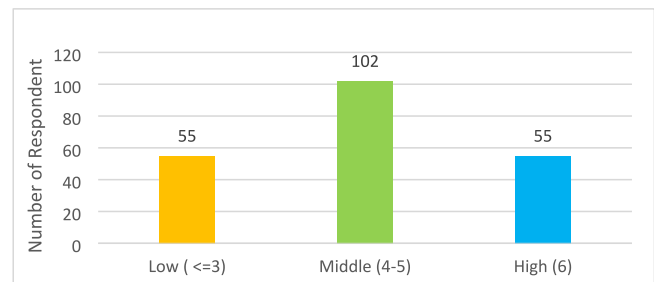


FIGURE 2 | Financial literacy levels of millennials. Source: Data processing by the author.

TABLE 3 | Percentage of objective financial literacy (OFL) correct answers.

Item	Indicator	Correct answer	%
OFL 1	Numeracy	191	90.09%
OFL 2	Interest compounding	144	67.92%
OFL 3	Inflation	160	75.47%
OFL 4	Time value of money	147	69.34%
OFL 5	Stocks/mutual funds	116	54.72%
OFL 6	Risk diversification	162	76.42%

Source: Data processing by the author.

TABLE 4 | Descriptive analysis and latent variable validity-reliability.

Code	Construct	Mean	Std. Dev	Loadings	VIF	CA (α)	CR (rho_a)	AVE
	Subjective financial literacy	3.211	0.780			0.820	0.949	0.556
SFL1	Well-informed about financial matters	3.255	0.917	0.847	1.955			
SFL2	Not knowledgeable	3.340	1.027	0.541	1.402			
SFL3	Referred to as a financial “expert”	2.646	1.078	0.877	2.033			
SFL4	Less knowledgeable compared to others	3.297	1.069	0.741	2.408			
SFL5	Not well-informed about financial matters	3.519	1.007	0.673	2.155			
	Retirement goal clarity	3.053	0.885			0.886	0.905	0.689
RGC1	Setting specific financial goals	2.958	1.061	0.867	2.536			
RGC2	Considering the quality of life	3.354	1.065	0.741	1.863			
RGC3	Having a clear perspective on retirement	2.986	1.071	0.892	2.989			
RGC4	Target for retirement information search	2.943	1.012	0.882	2.808			
RGC5	Discusses retirement plans	3.024	1.126	0.753	1.836			
	Financial risk tolerance	2.793	0.814			0.825	0.865	0.602
FRT1	Willing to take a risk of loss	2.821	1.058	0.881	2.440			
FRT2	Preferring high returns	2.693	1.030	0.857	2.831			
FRT3	Prioritizing growth potential	3.066	1.093	0.540	1.188			
FRT4	Prepared to take risks for financial stability	2.783	1.073	0.866	2.963			
FRT5	Not choosing the safest option	2.604	1.048	0.675	1.425			
	Retirement saving behavior	3.030	0.871			0.889	0.895	0.698
RSB1	Setting aside significant funds	2.538	0.903	0.680	1.638			
RSB2	Compared with same-age peers	2.726	0.981	0.814	2.167			
RSB3	Continuously accumulating savings	3.311	1.093	0.889	4.557			
RSB4	Aware of saving for retirement	3.401	1.092	0.898	4.761			
RSB5	Saving according to plan	3.175	1.117	0.877	3.211			

Source: Data processing by the author.

Table 4 presents the descriptive statistics and factor loading for the four latent variables in the study: Subjective Financial Literacy (SFL), Retirement Goal Clarity (RGC), Financial Risk Tolerance (FRT), and Retirement Saving Behavior (RSB). The respondents demonstrate a slight inclination toward confidence in their financial literacy, with an average subjective financial literacy score of 3.211 and a standard deviation of 0.780. The highest loading value is found in the item SFL3, which states, “Among my peers, I can be considered a ‘financial expert,’” with a loading of 0.877; this item also has the lowest mean score (2.646). The item with the highest mean score, at 3.340, is SFL2: “I do not feel I have enough knowledge about finance.” As for the retirement goal clarity variable, the mean score is at a midpoint of 3.053, with a standard deviation of 0.885. The item RGC3, “I have a clear vision of what my life will be like in retirement,” shows the highest loading at 0.892. The item with the highest

mean score of 3.354 is RGC2: “I think a lot about the quality of life in retirement,” while the lowest mean score is for RGC4, “I have set clear targets regarding the information I need to seek about retirement,” which has a mean of 2.943.

The respondents’ tolerance for financial risk shows a slightly low tendency, with an average score of 2.793 and a standard deviation of 0.814. The item FRT1, “I am willing to take financial loss risks,” records the highest loading at 0.883. The item FRT3, “For me, the potential growth of retirement investments is more important than the level of risk,” boasts the highest mean score of 3.066, whereas FRT5, “As a general rule, I would not choose the safest investment options for retirement planning,” has the lowest mean score of 2.604. The subsequent variable, retirement saving behavior, has an average score of 3.030 with a standard deviation of 0.871. The item RSB4 shows the highest

TABLE 5 | Discriminant validity analysis.

Fornell–Larcker Criterion						Heterotrait–monotrait					
Construct	FRT	OFL	RGC	RSB	SFL	Construct	FRT	OFL	RGC	RSB	SFL
FRT	0.776					FRT					
OFL	0.173	1.000				OFL	0.185				
RGC	0.489	0.162	0.830			RGC	0.551	0.170			
RSB	0.396	0.176	0.561	0.836		RSB	0.453	0.183	0.627		
SFL	0.436	0.370	0.461	0.444	0.746	SFL	0.414	0.409	0.448	0.435	

Note: Bold indicates Fornell-Larcker criterion and HTMT ratio values.

Source: Data processing by the author.

loading at 0.898 and the highest mean score of 3.401, reflecting the statement, “I consciously save for retirement.” In contrast, the item with the lowest mean score is RSB1, “I set aside significant funds for my voluntary retirement savings plan,” at 2.538. According to Hair et al. (2019), the analysis of PLS-SEM results begins with evaluating the measurement instruments or outer model analysis. $VIF < 5$ then no multicollinearity in each indicator. The construct validity of the measurement tool is deemed acceptable if the indicators possess loadings above 0.708, or can be retained if their scores exceed 0.5. In this study, the majority of items achieved loading scores above 0.7, with none falling below 0.5, thereby ensuring that all indicators are maintained to uphold the content validity of the measurement tool.

In Table 4, both the Cronbach’s α and composite reliability (ρ_a) values for all constructs are above 0.8, indicating strong internal consistency. Additionally, the AVE values exceeding 0.5 demonstrate that the variables within each construct are closely related, confirming adequate convergent validity. The fourth assessment involves evaluating discriminant validity across the variables. Table 5 shows that the Fornell–Larcker criterion scores for all constructs are higher than the inter-variable correlations. Moreover, the heterotrait–monotrait ratio of correlations (HTMT) ratio values, which are all below 0.85, further confirm that discriminant validity requirements have been met. These results collectively suggest that discriminant validity has been established successfully.

Following the outer model analysis, an inner model analysis was conducted to explore the structural relationships between the variables. As part of the preliminary analysis, gender and age were included as control variables across the three endogenous constructs: Retirement Goal Clarity (RGC), Financial Risk Tolerance (FRT), and Retirement Saving Behavior (RSB). The results revealed that only gender had a statistically significant effect on FRT ($p < 0.05$), while other associations were not significant and therefore omitted from the final structural model. As shown in Figure 3, the endogenous variable retirement saving behavior has an R-squared value of 0.366, indicating that the research model accounts for 36.6% of the variance in retirement saving behavior. The remaining 63.4% is influenced by factors and variables external to this model. Predictive relevance (Q^2) assesses the structural model’s capability to predict observed data. The calculated Q^2 value for this research model is 0.597, suggesting that the model demonstrates a strong predictive capacity (Hair et al. 2019).

Table 6 details the path coefficients, t -statistics and VIF for each relationship among the variables. Specifically, Subjective Financial Literacy has a significant direct effect on Retirement Saving Behavior (path coefficient=0.202, t -statistic=2.597), Retirement Goal Clarity (path coefficient=0.465, t -statistic=7.425), and Financial Risk Tolerance (path coefficient=0.366, t -statistic=5.737). Additionally, Retirement Goal Clarity significantly influences Retirement Saving Behavior (path coefficient=0.415, t -statistic=5.436). Conversely, the direct effects of Objective Financial Literacy on Retirement Saving Behavior, Retirement Goal Clarity, and Financial Risk Tolerance, as well as the effect of Financial Risk Tolerance on Retirement Saving Behavior, are not significant. In terms of indirect effects, Subjective Financial Literacy demonstrates a significant impact on Retirement Saving Behavior through Retirement Goal Clarity (path coefficient=0.193, t -statistic=4.163), but not through Financial Risk Tolerance. Meanwhile, Objective Financial Literacy does not show any significant indirect effects through either Retirement Goal Clarity or Financial Risk Tolerance. The analysis results indicate that hypotheses H2, H3, H6, H8, and H10 are supported, with t -statistics exceeding 1.96 and p values less than 0.05.

In the inner model, multicollinearity testing is performed between latent variables that predict the dependent variable. The results indicate a VIF value of less than 3.3, suggesting the absence of multicollinearity, which makes this criterion appropriate for exploratory research with smaller datasets. Through path analysis test, this study explores specific factors influencing retirement saving behavior in millennials, and therefore does not conduct a heterogeneity (sub-group) analysis, which may limit the generalizability of the findings. Furthermore, the proposed structural model encompasses multiple variables and interactions, thus adding a group analysis would only increase the complexity of the research without providing significant value to the results.

5 | Robustness Test

The model fit test results show SRMR=0.098, NFI=0.770. d_{ULS} =2.664 and d_G =0.544, indicating that the model has a less-than-optimal fit. However, with an R^2 value of 0.366 (which falls within the strong effect range of $0.26 \leq R^2 \leq 1.00$, indicating strong effect) and a PLS Predict Q^2 value of 0.597 ($Q^2 > 0.35$, indicating strong predictive ability), the model demonstrates

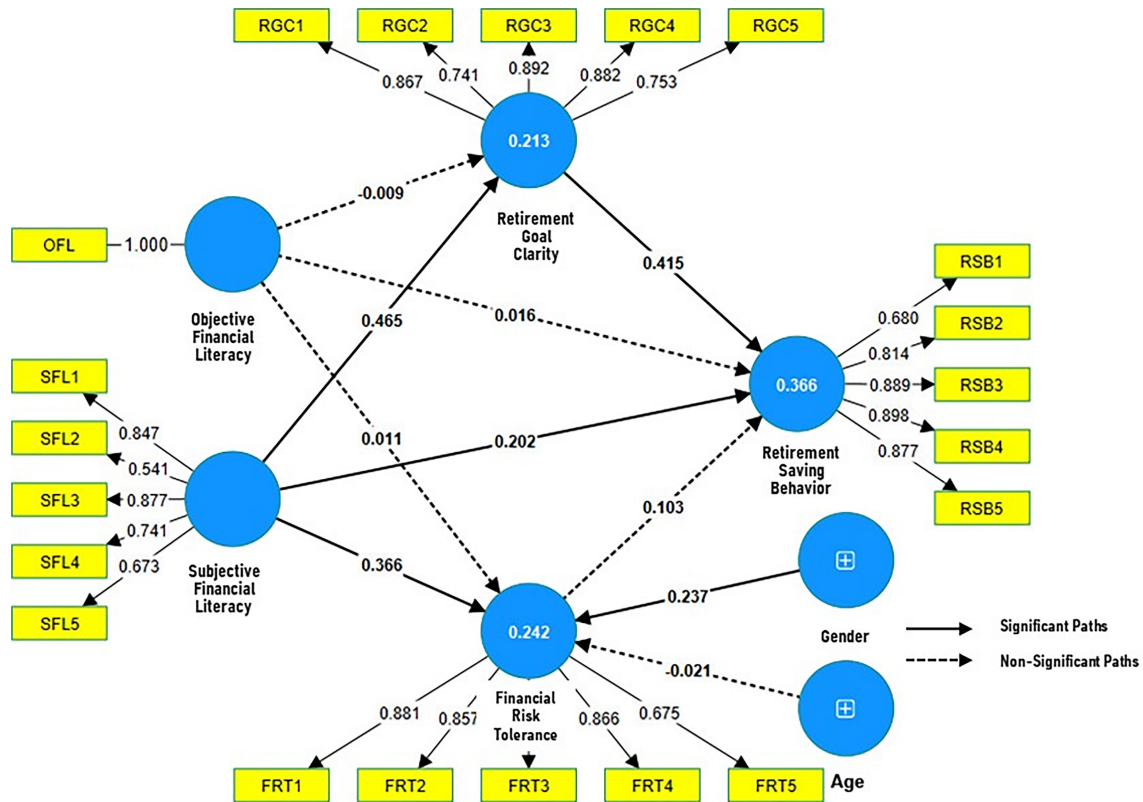


FIGURE 3 | Flow diagram and PLS-SEM calculation result. *Source:* Data processing by the author.

excellent predictive power. This is consistent with the fact that SmartPLS focuses more on prediction than traditional model fit assessments (Hair Jr. et al. 2021).

6 | Discussion

The research findings reveal that the Retirement Saving Behavior scores among respondents are primarily centered around the midpoint. This indicates a lack of specific trends in retirement preparation behaviors among the millennial generation in Indonesia participating in this study. Additionally, the high mean value observed in RSB4 suggests that respondents recognize the importance of retirement preparation; however, this awareness does not translate into significant retirement savings, as evidenced by the low score in RSB1. This outcome confirms van Raaij’s (2016) observation of a paradox where individuals acknowledge the necessity of preparing for retirement yet fail to accumulate actual savings.

When assessing financial literacy, respondents exhibit a moderate tendency in objective measures, while subjective assessments range from moderate to high. Most respondents correctly answered basic concepts related to Objective Financial Literacy, particularly in numeracy calculations, but only about half could accurately respond to questions regarding mutual funds. This aligns with the findings of van Raaij (2016) and van Rooij et al. (2011), which suggest that basic financial concepts are widely understood, unlike more complex topics such as mutual funds and stocks, which remain less comprehensible. Regarding Subjective Financial

Literacy, respondents generally shy away from self-identifying as “unknowledgeable,” as indicated by the high scores on the reverse item SFL5. Simultaneously, they exhibit reluctance to label themselves as “experts,” reflected in the low score of items SFL3.

The Retirement Goal Clarity results indicate a similar midpoint trend, suggesting that some respondents possess both high and low levels of Retirement Goal Clarity. Many respondents actively consider their quality of life in retirement, which is a crucial initial step in defining clear retirement goals (Stawski et al. 2007), even though they lack clarity regarding the information necessary for retirement preparation. This uncertainty may stem from the perception that retirement is a distant prospect for the millennial generation, making it seem less relevant to seek out information on the topic (van Raaij 2016).

Findings on Financial Risk Tolerance show low scores among respondents, indicating a tendency to avoid risk. This aversion may be attributed to the millennial generation’s upbringing in an environment characterized by uncertainty, which dampens their inclination toward financial risk (Larson et al. 2016). The low score on FRT5 suggests a preference against the safest investment options, despite their potential for lower returns. Conversely, respondents acknowledge the importance of focusing on potential investment growth, as indicated by the score for FRT3, which is a fundamental characteristic of risk-seeking individuals (van Raaij 2016; Jacobs-Lawson and Hershey 2005; Nguyen et al. 2022). Unfortunately, this emphasis on growth does not appear to be strong enough to foster a willingness to accept the risk of loss.

TABLE 6 | Path coefficients of the structural equation model.

	Original sample (O)	t-statistic	p	VIF
Direct effect				
H1. OFL ->RSB	0.016	0.274	0.784	1.159
H2. SFL ->RSB	0.202	2.597	0.009**	1.530
H3. RGC ->RSB	0.415	5.436	0.000**	1.461
H4. FRT ->RSB	0.103	1.365	0.172	1.421
H5. OFL ->RGC	-0.009	0.150	0.881	1.158
H6. SFL ->RGC	0.465	7.425	0.000**	1.158
H7. OFL ->FRT	0.011	0.188	0.851	1.162
H8. SFL ->FRT	0.366	5.737	0.000**	1.243
Age -> FRT	-0.021	0.327	0.744	
Gender -> FRT	0.237	3.810	0.000**	
Indirect effects				
H9. OFL ->RGC ->RSB	-0.004	0.147	0.883	—
H10. SFL ->RGC ->RSB	0.193	4.163	0.000**	—
H11. OFL ->FRT ->RSB	0.001	0.145	0.884	—
H12. SFL ->FRT ->RSB	0.038	1.244	0.213	—
Age -> FRT ->RSB	-0.002	0.262	0.793	
Gender -> FRT ->RSB	0.024	1.236	0.217	

Source: Data processing by the author.

7 | Driving Factors of Retirement Saving Behavior

This study aims to identify the factors driving retirement preparation behavior among Indonesia's millennial generation and reveals that psychological factors significantly influence this behavior. A unique aspect of this research is the comparison between Subjective Financial Literacy and Objective

Financial Literacy. The findings indicate that Subjective Financial Literacy has a significant impact on Retirement Saving Behavior, while Objective Financial Literacy does not exhibit the same effect. Although these results contrast with the findings of Larisa et al. (2021), they are consistent with Garcia Mata (2021), who similarly found no significant influence of Objective Financial Literacy on active retirement strategies among young people in Mexico. This suggests that high levels of financial understanding do not necessarily guarantee proactive retirement preparation behavior among youth who may not yet perceive the urgency of such actions (van Raaij 2016).

The significant influence of Subjective Financial Literacy on Retirement Saving Behavior aligns with studies by Harahap et al. (2022), Bapat (2020), and Yue et al. (2018), which found that Subjective Financial Literacy positively affects financial management and retirement preparation behaviors among Indonesian entrepreneurs, young Indians, and Hong Kong workers, respectively. This supports the TPB (Ajzen 2005), wherein Subjective Financial Literacy functions as a form of perceived behavioral control that affects individual retirement preparation. When individuals consider themselves "experts" in finance, they are likely to feel more in control and responsible for their futures, increasing their awareness of the importance of retirement savings. A stronger perception of control correlates with a greater likelihood of preparing for retirement, while a weaker perception tends to lead to procrastination in making financial decisions, such as retirement planning (Riitsalu and Murakas 2019). This finding further reinforces the concept of behavioral finance, which posits that humans are "homo psychologicus," influenced more by psychological factors like biases and heuristics than by rational thought, thereby giving Subjective Financial Literacy a more dominant role in impacting Retirement Saving Behavior compared to Objective Financial Literacy (van Raaij 2016).

Another psychological factor that significantly affects Retirement Saving Behavior identified in this study is Retirement Goal Clarity. Individuals with a clear vision of their retirement and who actively seek retirement-related information are more likely to understand the importance of saving for retirement to realize that vision. This finding is consistent with earlier research (Kumar, Tomar, and Verma 2019; Sani et al. 2022; Stawski et al. 2007; Tomar et al. 2021). A clear picture of desired retirement life facilitates better planning and execution of retirement strategies (Kumar, Tomar, and Verma 2019; Yue et al. 2018). Such clarity can inspire and cultivate a positive attitude toward retirement preparation, thereby enhancing the intention and likelihood of engaging in retirement planning, as suggested by the TPB (Ajzen 2005; Sani et al. 2022; van Raaij 2016).

However, the other psychological factor, Financial Risk Tolerance, did not demonstrate a significant influence on Retirement Saving Behavior. An individual's level of financial risk tolerance does not predict their tendency to prepare for retirement. This finding aligns with previous studies exploring the relationship between financial risk tolerance and retirement preparation behavior (Alkhawaja and Albaity 2022; Larisa et al. 2021; Tomar et al. 2021). An individual's willingness to accept risk and preference for high returns do not

necessarily lead to engagement with or recognition of the importance of retirement investment products. This may be attributed to millennials not feeling the urgency of retirement preparation, resulting in a focus on short-term investment returns instead (van Raaij 2016).

7.1 | Retirement Goal Clarity and Financial Risk Tolerance as Mediators

The findings of this study highlight notable differences in the effects of two types of financial literacy—Objective Financial Literacy and Subjective Financial Literacy—on Retirement Goal Clarity. Specifically, Objective Financial Literacy does not show a significant effect on Retirement Goal Clarity, whereas Subjective Financial Literacy demonstrates a significant influence. This observation aligns with the TPB, which asserts that individual intention is more strongly influenced by perceptions of control than by actual control itself (Ajzen 2012). As a result, an individual's confidence in their ability to understand and make financial decisions plays a critical role in motivating them to take essential financial actions, including establishing clear retirement goals and saving for retirement, as indicated by Yue et al. (2018).

The influence of Retirement Goal Clarity on Retirement Saving Behavior suggests a mediating role for Retirement Goal Clarity. The research findings indicate that Retirement Goal Clarity partially mediates the effect of Subjective Financial Literacy on Retirement Saving Behavior, while this mediation does not occur for Objective Financial Literacy. As noted earlier, although individuals with high Objective Financial Literacy may possess the ability to calculate or plan for retirement, this skill does not necessarily compel them to engage in such planning (Yue et al. 2018). In contrast, Subjective Financial Literacy fosters an individual's belief in their capacity to process information and make sound financial decisions, subsequently motivating them to create a clear vision and plan for retirement preparation (Yue et al. 2018). This vision and plan then drive individuals to actualize their retirement preparation through proactive behavior (Stawski et al. 2007).

Moreover, the study finds that, regarding Financial Risk Tolerance, Objective Financial Literacy does not exert a significant influence, while Subjective Financial Literacy shows a significant effect. Although this finding contradicts the results of Larisa et al. (2021), which identified an influence of Objective Financial Literacy on Financial Risk Tolerance, it is consistent with the findings of Nguyen et al. (2022) and Harahap et al. (2022) which established Subjective Financial Literacy as a significant predictor of Financial Risk Tolerance. The more an individual perceives themselves as a “financial expert,” the less apprehensive they are about taking risks and the more they focus on achieving high returns, believing they can manage the associated risks. High Subjective Financial Literacy enhances an individual's sense of control, encouraging them to take on greater financial risks (Bapat 2020). Conversely, an understanding of complex financial matters can lead individuals to either embrace significant financial risks or shy away from them, depending on their personal characteristics (Larson et al. 2016).

The study does not find a significant influence of Financial Risk Tolerance on Retirement Saving Behavior, indicating an absence of a mediating role for Financial Risk Tolerance in the relationship between financial literacy and Retirement Saving Behavior. This lack of mediation is consistent with several previous studies (Larisa et al. 2021). An individual's aspiration for high returns does not mediate the impact of financial literacy on Retirement Saving Behavior, as it cannot be assumed that those with high Financial Risk Tolerance are willing to exercise patience in waiting for returns until retirement (future time perspective) (Nguyen et al. 2022).

From the hypothesis testing conducted, it is evident from this research that Retirement Saving Behavior, as a construct of behavioral finance, is influenced by various psychological variables (van Raaij 2016; Tomar et al. 2021). According to the TPB, individual intention and behavior can be predicted by an individual's positive outlook on the consequences of certain behaviors, their perceived control over performing those behaviors, and the subjective norms associated with those behaviors (Ajzen 1991, 2012). Retirement Goal Clarity shapes an individual's positive perspective on an ideal retirement after engaging in retirement preparation (Stawski et al. 2007; Yue et al. 2018), while Subjective Financial Literacy enhances an individual's self-efficacy, reinforcing their belief in their ability to prepare effectively for retirement (Bapat 2020; Yue et al. 2018).

8 | Conclusion

This research represents the first effort, to the best of the researcher's knowledge, to investigate both subjective and objective financial literacy in relation to retirement saving behavior, with retirement goal clarity and financial risk tolerance serving as mediators, specifically among Indonesia's millennial generation. The findings reveal that psychological factors, including subjective financial literacy and retirement goal clarity, significantly influence retirement saving behavior. Moreover, the study demonstrates that subjective financial literacy has a significant effect on retirement goal clarity, resulting in a partial mediation effect of retirement goal clarity on the relationship between subjective financial literacy and retirement saving behavior. This study contributes to a deeper understanding of the factors that affect retirement preparation behavior, particularly within Indonesia's millennial demographic, which currently constitutes a significant portion of the workforce. Based on these findings, it is recommended that stakeholders focus on enhancing millennials' confidence in their financial knowledge and encourage them to set clear retirement goals. Such initiatives aim to increase the likelihood that millennials will proactively prepare for retirement early, thereby ensuring they enter this phase of life with financial security and reducing the potential burden on Indonesia's economic landscape.

9 | Limitation and Recommendation for Further Study

This study has several limitations. First, the use of purposive sampling, with a majority of respondents drawn from Java Island, limits the generalizability of the findings to the broader

millennial generation across Indonesia. Future research is recommended to employ sampling methods that ensure a more proportional representation of respondents from various regions to yield results that can be generalized more effectively.

Second, this research focuses specifically on the millennial generation, treating individuals as the unit of analysis. Future studies could incorporate other generations, such as Generation X and Generation Z, to examine differences in retirement preparation across generational lines. Additionally, as many millennials are now entering marriage, subsequent research could analyze families as units of analysis to explore variations in retirement preparation among different family sizes.

The third limitation concerns the restricted range of variables investigated, suggesting that there are additional psychological and demographic factors that could be examined to enhance predictive validity regarding retirement preparation. Future research could explore additional factors or variables, such as future-time perspective, locus of control, and risk perception among millennials in relation to retirement life. Moreover, subsequent studies could include indicators of more complex financial literacy to obtain a more comprehensive understanding of the distribution of Objective Financial Literacy in the research context.

Finally, the fourth limitation pertains to the low Objective Financial Literacy scores among respondents related to the item concerning “stocks.” Additionally, the questions in the Retirement Saving Behavior measurement tool that refer to “retirement savings funds” may limit insights into other forms of retirement preparation that respondents may engage in. It is possible that respondents are not investing in stocks but rather in other assets, such as real estate, businesses, or other financial instruments that have not been addressed in this study’s analysis.

10 | Managerial Implication

The findings of this study offer valuable insights for Indonesia’s millennial generation, policymakers, and providers of retirement savings products. The results reveal that Indonesian millennials function as “homo psychologicus,” influenced by various psychological factors such as individual self-confidence and goal setting, which significantly enhance their retirement preparation behaviors. Stakeholders can capitalize on these factors to cultivate early retirement preparation habits, ultimately improving financial well-being and contributing to the country’s macroeconomic stability (van Raaij 2016; Klapper and Lusardi 2020).

To enhance their intentions toward retirement preparation, millennials can create a clear vision of their future retirement life. This involves defining their ideal quality of life in retirement, estimating living expenses while accounting for inflation, and calculating regular savings with consideration for compound interest. Furthermore, they can strengthen their financial self-efficacy by increasing their financial literacy, exploring high-potential investment opportunities, and learning from the success stories of individuals who have effectively prepared for retirement.

The government should promote early retirement preparation behaviors among millennials by addressing both subjective and psychological aspects. Awareness campaigns featuring inspirational narratives, as well as the establishment of communities and forums for retirement-related financial discussions, can help foster financial literacy and boost millennials’ confidence in making informed decisions regarding their retirement planning. These initiatives should be integrated into the educational curriculum to ensure comprehensive financial literacy education. Financial product providers can also play a crucial role by assisting millennials in setting both qualitative and quantitative retirement goals. By providing essential information and establishing clear benchmarks for retirement preparation, they can help millennials develop concrete objectives, thereby promoting proactive retirement preparation behaviors among this demographic.

Ethics Statement

The authors declare that all respondents gave informed consent to participate voluntarily. No personal information that would allow identifying individuals was collected.

Conflicts of Interest

The authors declare no conflicts of interest.

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