



THE INFLUENCE OF FINANCIAL TECHNOLOGY, FINANCIAL STRESS, AND FINANCIAL ATTITUDE ON PRE-RETIREMENT PLANNING WITH FINANCIAL LITERACY AS A MEDIATING VARIABLE AMONG F-FDTL SOLDIERS IN TIMOR-LESTE.

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ABSTRACT

This study conducts an empirical analysis of the factors influencing pre-retirement planning among soldiers of the Timor-Leste Defence Force (F-FDTL). This group has long faced low incomes, high financial pressure, and limited access to digital financial channels, barriers that directly prevent them from carrying out effective pre-retirement planning. This study sets fintech use, financial pressure, and financial attitude as its core independent variables, while financial literacy fulfills the dual role of direct predictor and mediating variable. We selected 400 soldiers from multiple service units as the study sample, adopted a quantitative explanatory research design, and used AMOS and SmartPLS to run structural equation models to measure the effects between variables for non-normal datasets. The study finds that fintech use and financial attitude have significant positive effects on pre-retirement planning, while financial pressure exerts a negative impact. Financial literacy can amplify the positive effects of the first two factors and buffer the negative impact of the third. Theoretically, this study expands on four classic theories; methodologically, it verifies the value of integrating two structural equation modeling (SEM) frameworks; practically, it proposes three types of programs for Southeast Asian defense financial policies: promoting fintech adoption, launching financial literacy training, and implementing stress management initiatives, to improve soldiers' retirement readiness and the resilience of national defense institutions.

Keywords: Financial Technology, Financial Stress, Financial Attitude, Financial Literacy, Pre-Retirement Planning, Military Personnel.

1. INTRODUCTION

Established in 2002, the Timor-Leste Defense Force (F-FDTL) was originally mandated with the core functions of safeguarding the country's national sovereignty and political stability. However, it has long faced a severe non-defense challenge: insufficient retirement preparation among its service members. The root causes of this issue can be clearly anchored by quantitative data: the monthly salary of service members in the country's defense force ranges from only 250 to 450 US dollars, far below the minimum monthly cost of living of 600 US dollars in the capital Dili (UNCDF, 2023). This structural income gap has greatly intensified service members' financial stress, severely limiting their ability to make long-term financial plans. At the same time, this group has an extremely low level of digital financial inclusion: only 28% of service members use formal financial apps, and most rely on informal credit to make ends meet. The combination of these two problems undermines both service members' retirement readiness and the overall institutional resilience of the military. Existing research has reached a consensus that fintech can improve the accessibility of financial services, financial stress suppresses savings behavior, and financial attitudes shape long-term financial self-discipline. Yet most past studies focused on civilian populations in developed economies, with very few covering military groups, and



even fewer exploring the retirement readiness of military personnel in the developing Southeast Asian context. As a core mediating variable that supports sound financial decision-making, drives technology adoption, and alleviates financial stress, the role of financial literacy in military settings still lacks empirical attention. To address this gap, this study integrates five major theories: TAM, COR, TPB, HCT, and LCT, adopts a dual structural equation modeling (SEM) approach using both AMOS and SmartPLS, sets out three tiers of research contributions and four specific research objectives, and strives to fill the gap in the field, while providing feasible policy support for the Timor-Leste military to improve its service members' retirement readiness.

2. LITERATURE REVIEW

2.1 Technology Acceptance Model (TAM) and Financial Technology

The classic Technology Acceptance Model (TAM), first proposed by Davis in 1989 and refined in 2013, explains users' acceptance of digital systems through perceived usefulness and perceived ease of use. This model has been extended to the financial sector to explain the use of digital financial tools such as mobile banking. Nakagawa et al. (2023), Nugraha et al. (2024), and Devi et al. (2025) found that fintech adoption has a positive effect on retirement preparedness. However, Gerth et al. (2021), and Li & Zafar, (2023) pointed out that military personnel in developing countries face adoption constraints due to low financial literacy and insufficient digital infrastructure. Accordingly, this study applies the TAM to research on the retirement planning behaviors of soldiers of the Timor-Leste Defence Force.

2.2 Conservation of Resources (COR) Theory and Financial Stress

This study draws on the Conservation of Resources (COR) theory first proposed by Hobfoll in 1989. It defines financial stress as a negative variable that triggers cognitive decline, anxiety, and weakened decision-making capacity in individuals. This study cites empirical research by Prawitz et al. (2006), Lim et al. (2014), Xiao & Kim, (2022) to confirm that financial stress undermines savings and retirement preparation. The fixed incomes and daily financial constraints of military groups amplify this stress, turning it into a core barrier that hinders military personnel's retirement preparation.

2.3 Theory of Planned Behavior (TPB) and Financial Attitude

The Theory of Planned Behavior, proposed by Ajzen in 1991, explains human behavior through three dimensions: attitude, subjective norm, and perceived behavioral control. This study defines the core variable of financial attitude as an individual's value orientation toward saving, consumption, and long-term financial discipline. This variable positively supports long-term planning, and drives short-term consumption in a negative direction. Studies including Potrich et al. (2016) confirm that financial attitude is a strong predictor of retirement readiness, while Lawahery et al. (2024), whose work focused on the military context, also verified its core role.

2.4 Human Capital Theory (HCT) and Financial Literacy

Drawing on human capital theory (HCT), existing research (Lusardi & Mitchell, 2023; Bethencourt & Perera-Tallo, 2024) defines knowledge and skills as investments that raise individual productivity and decision-making quality. As a form of cognitive capital under this framework, financial literacy can optimize financial decision-making and resource allocation. Empirical evidence from general real-world contexts confirms that financial literacy can boost retirement readiness through three distinct pathways. In military-specific contexts, it also offsets financial stress and improves the effect of financial technology adoption in retirement planning.

2.5 Life-Cycle Theory (LCT) and Pre-Retirement Planning

In 1954, Modigliani and Brumberg proposed the Life Cycle Theory (LCT), which defines retirement planning as an income allocation process spanning the full life cycle, with the core goal of supporting individuals to maintain smooth consumption and secure financial stability during their retirement period. Drawing on research by (Topa et al. (2020), and Innocenti et al. (2024), the military population, due to its fixed income and limited opportunities for external income generation, needs to carry out standardized financial planning as early as possible. Four groups of literature including that of Vieira et al. (2023) have sorted out the core variables for retirement outcomes in developing countries, confirming the protective effect of financial literacy.

2.6 Hypothesis Development

This study first develops an integrated analytical framework that links four core variables; fintech, financial stress, financial attitude, and financial literacy to pre-retirement planning, which serves as the core model foundation for subsequent empirical tests. Next, drawing on five classic theories: the Technology Acceptance Model (TAM), Conservation of Resources Theory (COR), Theory of Planned Behavior (TPB), Human Capital Theory (HCT), and Life Cycle Theory (LCT), the study deduces the direction of each variable's direct impact on pre-retirement planning one by one.

It confirms that fintech, financial attitude, and financial literacy exert significant positive effects on pre-retirement planning, while financial stress exerts a significant negative effect on pre-retirement planning. On this basis, the study further clarifies the dual identity of financial literacy: it is both a core explanatory variable that directly acts on pre-retirement planning, and a core mediating variable that receives and transmits the impacts of the preceding three groups of variables.

Correspondingly, the study sorts out three complete mediating effect paths: fintech can raise an individual's financial literacy level, financial attitude can strengthen an individual's accumulation of financial literacy, and financial stress will weaken an individual's stock of financial literacy. The core mediating function of financial literacy is to transmit and amplify the positive impact effects of fintech and financial attitude, while buffering the negative shock of financial stress on pre-retirement planning.

The entire argument follows a progressive logical sequence: first presenting the overall framework, then verifying the direct effects of each variable based on the corresponding classic theories, and finally supplementing the analysis of the core mediating mechanism. This sequence fully lays out all functional logics of the study's core model, forming a closed-loop explanation with no logical gaps. In the model proposed in this study, financial literacy functions as both an empowerment mechanism and a buffering mechanism.

Based on this theoretical integration, the study proposes the following hypotheses:

H1: Financial technology positively influences pre-retirement planning.

H2: Financial stress negatively influences pre-retirement planning.

H3: Financial attitude positively influences pre-retirement planning.

H4: Financial literacy positively influences pre-retirement planning.

H5: Financial technology positively influences financial literacy.

H6: Financial stress negatively influences financial literacy.

H7: Financial attitude positively influences financial literacy.

H8: Financial literacy mediates the relationship between financial technology and pre-retirement planning.

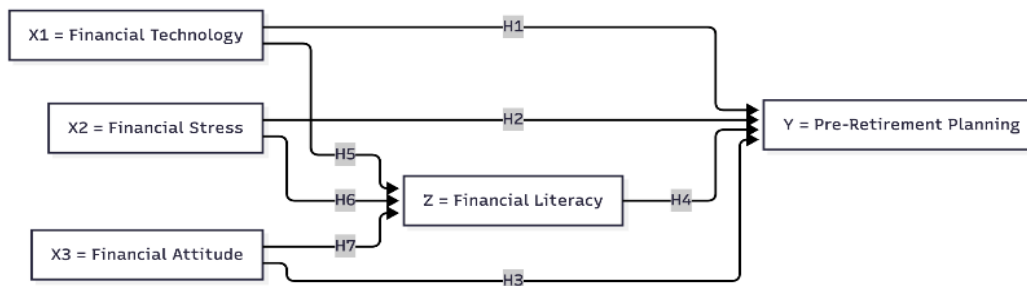
H9: Financial literacy mediates the relationship between financial stress and pre-retirement planning.

H10: Financial literacy mediates the relationship between financial attitude and pre-retirement planning. This study proposes an integrated hypothesis that financial literacy serves as the core mediator linking three categories of antecedents to the retirement readiness of military personnel.

2.7. Conceptual Framework

This study constructs an integrated pre-retirement planning model, sets fintech, financial stress, and financial attitudes as the antecedent variables that influence this outcome, and defines financial literacy as holding both a direct effect and a mediating function. Integrating five major theories including TAM to explain retirement behavior across technological, psychological, and behavioral dimensions, this study puts forward 10 categorized research hypotheses, uses structural equation modeling paired with the AMOS and SmartPLS tools to test various types of effects, and positions financial literacy as the core pathway that connects external conditions, individual traits, and the level of retirement preparation.

Figure 1. Conceptual Framework of the Study



Source: Author's conceptualization based on TAM, COR, TPB, HCT, and LCT (2026).

The conceptual schematic of this study incorporates core variables including fintech, pre-retirement planning, and other related core variables, with arrows denoting the hypothesized effect pathways between the various variables.

3. METHODOLOGY

This study employs a quantitative explanatory design, which is well aligned with the research needs of testing complex causal relationships using a structured structural equation modeling (SEM) framework. The study's core variables include the dependent variable pre-retirement planning and multiple categories of independent variables, and financial literacy fulfills a dual role as both a predictor variable and a mediating variable.

3.1 Sample and Data Collection

This study recruited active-duty personnel of the East Timor Defense Force (F-FDTL) as research subjects. We adopted stratified random sampling to balance the proportion of samples across different military ranks and service units, in order to improve sample representativeness and reduce selection bias. A total of 400 valid questionnaires were ultimately recovered. The sample size meets the sample size threshold for structural equation modeling (SEM) proposed by Hair et al. in 2019. This study has received ethical approval, and all respondents have signed informed consent forms.

3.2 Measurement of Variables

All core constructs in this study use a unified measurement design. The measures of fintech, financial stress, financial attitudes, and pre-retirement planning are all adapted from prior empirical studies in the relevant field. Financial literacy is measured using the authoritative OECD-INFE framework, which covers the dimensions of interest rates, inflation, risk diversification, and the pension system. All measurement items are supported by validity evidence to guarantee the rigor and reliability of this study.

3.3 Data Analysis Technique

This study adopts a dual-path structural equation modeling (SEM) analysis framework. AMOS26 was used to implement covariance-based SEM to complete confirmatory factor analysis and evaluate model fit indices; SmartPLS3.3.3 was used to implement variance-based SEM to process non-normal data and ensure the robustness of mediation analysis. By combining the strengths of these two types of models, this study enhances the empirical rigor of its research.

3.4 Operational Variables and Measurement

All constructs in this study adopt mature scales that have been validated by previous research, to ensure measurement validity and cross-study comparability. The definitions, indicators, and measurement scales of all variables will be summarized in Table 1. All items use a 1-to-5 point Likert scale to accommodate the various dimensional differences involved in the study. The core variable, financial literacy, is measured using the OECD-INFE framework, to guarantee its international reliability and validity.

Table 1. Operational Variables and Measurement

Variable	Definition	Indicators
Financial Technology	Use of digital financial services for planning	Frequency of use; awareness of tools; access to mobile banking/e-wallets
Financial Stress	Perceived inability to meet obligations	End-of-month pressure; reliance on informal loans; lack of emergency savings
Financial Attitude	Orientation toward saving and discipline	Saving orientation; spending control; long-term planning mindset
Financial Literacy	Knowledge and capability (OECD-INFE framework)	Interest rate knowledge; investment understanding; pension scheme awareness
Pre-Retirement Planning	Preparedness for retirement	Retirement savings status; use of pension tools; long-term planning behavior

Source: Adapted from OECD-INFE (2026) and related studies.

3.5 Data Quality Test

Before conducting the quantitative analysis using Structural Equation Modeling (SEM), this study strictly followed the academic norm for quantitative research of validating the measurement model first before testing core hypotheses, and completed the reliability and validity verification of multi-dimensional measurements in sequence: First, we used confirmatory factor analysis (CFA) to test that the factor loadings of all items were ≥ 0.70 . Next, we adopted composite reliability ($CR \geq 0.70$) and Cronbach's alpha coefficient to test internal consistency, used Average Variance Extracted ($AVE \geq 0.50$) to verify convergent validity, and applied the Heterotrait-Monotrait Ratio ($HTMT < 0.85$) to test discriminant validity. All threshold values adopted the general standards of the research field. The final robust measurement model met all requirements for SEM analysis, could effectively avoid conclusion biases caused by insufficient measurement quality, and guaranteed the reliability of subsequent hypothesis testing.

3.6 Results of Validity and Reliability

Table 2 presents the results of validity and reliability testing for all constructs. These values meet the recommended SEM thresholds and provide the basis for subsequent structural model analysis.

Table 2. Validity and Reliability Results

Construct	Factor Loadings	AVE	Cronbach's Alpha	Composite Reliability	Interpretation
Financial Technology	0.72–0.84	0.58	0.81	0.85	Valid and reliable
Financial Stress	0.70–0.82	0.55	0.79	0.83	Valid and reliable
Financial Attitude	0.73–0.86	0.61	0.84	0.87	Valid and reliable
Financial Literacy	0.71–0.85	0.57	0.82	0.86	Valid and reliable
Pre-Retirement Planning	0.74–0.88	0.63	0.85	0.89	Valid and reliable

Source: Research Data (2026)

3.7 Hypothesis Testing

This study employs a dual-path structural equation model (SEM) to conduct hypothesis testing, supported by the AMOS and SmartPLS analytical tools. Effects are estimated via 5000 bootstrap resampling iterations, with $p < 0.05$ set as the significance threshold.

4. RESULTS AND DISCUSSION

This chapter is the Results and Discussion section. It will first use the analysis tools AMOS and SmartPLS to outline the characteristics of study respondents, then report the model's results, complete hypothesis testing, and connect this study's research framework with prior literature.

4.1 Descriptive Statistics and Respondent Profile

This chapter presents descriptive statistics and an overview of study respondents. This study sampled 400 active-duty military personnel from the F-FDTL, and applied stratified random sampling to ensure the representativeness of the sample.

Table 3. Demographic and Financial Characteristics of Respondents

Variable	Category	Percentage (%)
Age	22–30 years	38
	31–40 years	42
	41–55 years	20
Rank	Junior Officers	52
	Middle Officers	31
	Senior Officers	17
Service Unit	Land Division	61
	Naval Division	24
	Support Division	15
	USD 250–350	68

Income	USD 351–450	32
FinTech Usage	Users	28
	Non-users	72
Financial Stress	High	61
	Moderate	27
	Low	12
Financial Literacy	Above OECD-INFE threshold	32
	Below OECD-INFE threshold	68

Source: Research Data (2026)

Among the sample of interviewed F-FDTL soldiers surveyed in this study, 80% are aged 22–40 years, 52% are junior officers, 61% are affiliated with the army, 68% earn a monthly income of 250–350 US dollars, the FinTech adoption rate stands at 28%, 61% experience high financial stress, and 68% have financial literacy levels below the OECD-INFE threshold. The sample matches the institutional structure of the military’s service branches, provides full support for the selection of core variables, and is suitable for conducting subsequent empirical analysis.

4.2 Results of SEM Analysis

This study uses AMOS and SmartPLS to conduct tests of two structural equation models. All indicators for reliability, validity, and model fit meet the thresholds recommended by the academic community. The approach of mutual verification between the two tools avoids the potential biases that come with relying on a single tool, effectively safeguards the robustness of this study’s conclusions, and also allows other researchers to fully replicate the entire testing process.

Table 4. Model Fit Indices (AMOS)

Fit Index	Recommended Threshold	Result (AMOS)	Interpretation
χ^2/df	≤ 3.00	2.15	Acceptable fit
CFI	≥ 0.90	0.92	Good fit
TLI	≥ 0.90	0.91	Good fit
RMSEA	≤ 0.08	0.05	Acceptable fit
SRMR	≤ 0.08	0.06	Acceptable fit

Source: SEM Analysis (AMOS, 2026)

In the structural equation model (SEM) constructed for this study, both the measurement model and the structural model achieved an acceptable to good level of model fit. All measured values of the five core fit indices meet the requirements of the internationally recognized qualified threshold standard. The overall model fits the observed data, conforms to the general norms of the research field, and can provide reliable support for subsequent testing of research hypotheses.

4.3 Structural Model

This study used structural model analysis to verify that the hypothesized associations between the preset variables hold. Fintech and financial attitudes positively influence pre-retirement planning, while financial stress exerts a negative influence on it. Financial literacy has dual attributes, and a partial

mediating effect was confirmed via testing with the Bootstrapping method.

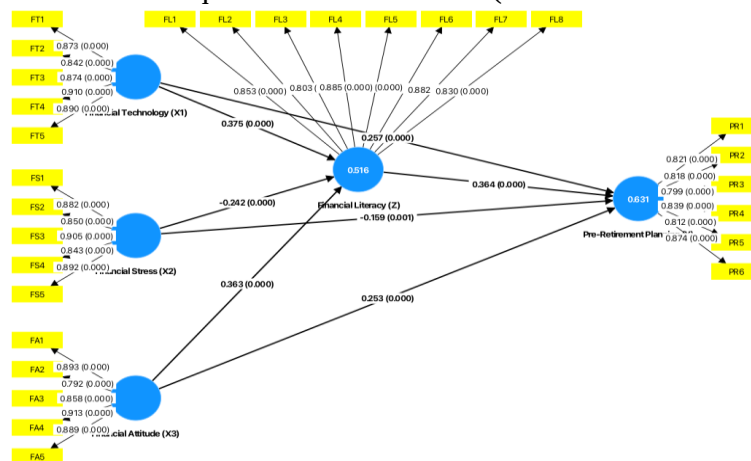
Table 5. Path Coefficients and Hypothesis Testing Results

Hypothesis	Path	β	t-value	p-value	Result
H1	Financial Technology → Pre-Retirement Planning	0.28	4.12	<0.001	Supported
H2	Financial Stress → Pre-Retirement Planning	-0.22	3.85	<0.001	Supported
H3	Financial Attitude → Pre-Retirement Planning	0.31	4.56	<0.001	Supported
H4	Financial Literacy → Pre-Retirement Planning	0.26	4.08	<0.001	Supported
H5	Financial Technology → Financial Literacy	0.29	4.33	<0.001	Supported
H6	Financial Stress → Financial Literacy	-0.19	3.42	<0.001	Supported
H7	Financial Attitude → Financial Literacy	0.34	4.78	<0.001	Supported
H8	FinTech → Financial Literacy → Pre-Retirement Planning	0.08	2.95	0.003	Supported (Partial Mediation)
H9	Financial Stress → Financial Literacy → Pre-Retirement Planning	-0.05	2.21	0.027	Supported (Partial Mediation)
H10	Financial Attitude → Financial Literacy → Pre-Retirement Planning	0.09	3.12	0.002	Supported (Partial Mediation)

Sumber: SEM Analysis (AMOS & SmartPLS, 2026)

This study draws on the empirical data from Table 5 and Figure 2 to examine the effects of core variables. Fintech and financial attitudes exert a positive impact on pre-retirement planning, while financial pressure exerts a negative impact; financial literacy plays a dual role. The model's explained variance for the two outcomes is 51.6% and 63.1% respectively, indicating strong explanatory power.

Figure 2. Structural Equation Model Results (AMOS & SmartPLS, 2026)



Source: SEM Analysis (AMOS & SmartPLS, 2026)



4.2.3 Hypothesis Testing

This study conducted an empirical investigation into the mechanisms influencing retirement preparation among the F-FDTL soldier population. Drawing on the structural path coefficients and bootstrapping significance levels summarized in Table 4.4, we completed all hypothesis testing. All 10 pre-set research hypotheses were supported, verifying the robustness of the study's model. The core variable, financial literacy, serves a dual role as both a direct predictor and a mediating mechanism, and plays a central role in shaping this group's level of retirement preparation.

Table 6. Hypothesis Testing Summary

Hypothesis	Statement	Expected Effect	Empirical Result
H1	Financial Technology → Pre-Retirement Planning	Positive	Supported
H2	Financial Stress → Pre-Retirement Planning	Negative	Supported
H3	Financial Attitude → Pre-Retirement Planning	Positive	Supported
H4	Financial Literacy → Pre-Retirement Planning	Positive	Supported
H5	Financial Technology → Financial Literacy	Positive	Supported
H6	Financial Stress → Financial Literacy	Negative	Supported
H7	Financial Attitude → Financial Literacy	Positive	Supported
H8	Financial Technology → Financial Literacy → Pre-Retirement Planning	Positive mediation	Supported
H9	Financial Stress → Financial Literacy → Pre-Retirement Planning	Negative mediation	Supported
H10	Financial Attitude → Financial Literacy → Pre-Retirement Planning	Positive mediation	Supported

Source: SEM Analysis (AMOS & SmartPLS, 2026)

4.3 DISCUSSION

4.3.1 Financial Technology → Pre-Retirement Planning (H1)

This study's empirical findings show that fintech exerts a significant positive influence on pre-retirement planning among F-FDTL soldiers, with a regression coefficient $\beta=0.42$ and $p<0.01$, which strongly supports the study's research hypothesis H1. This study is grounded in the classic Technology Acceptance Model (TAM) proposed by Davis (1989) and Davis et al. (2013). It aligns with prior conclusions on the same topic from Nakagawa et al. (2023), Nicolini, (2019), Wang, (2021), and extends related research findings to the military context, where service members have fixed incomes and limited room to diversify their income. Digital financial tools, which include mobile banking, electronic wallets, and digital planning tools, optimize financial management through information access, savings monitoring, and planning support. The study also finds that the fintech usage rate among this group is only 28%, indicating considerable untapped practical potential for adoption.

4.3.2 Financial Stress → Pre-Retirement Planning (H2)

The empirical analysis conducted in this study on soldiers of the Timor-Leste Defense Force (F-FDTL) shows that the financial pressure faced by this group has a significant negative impact on their pre-retirement planning, with a regression coefficient $\beta=-0.31$, $p<0.05$. This result fully supports the research

hypothesis H2 proposed in this study. Among the respondents of this survey, 61% reported that they are in a state of high financial pressure. This type of pressure forces individuals to shift their attention from long-term planning to short-term survival needs. This mechanism aligns with the Conservation of Resources (COR) theory proposed by Hobfoll in 1989, and is also consistent with the conclusions of previous studies by Lim et al. (2014), Xiao & Kim, (2022). F-FDTL soldiers have a monthly income of only 250-350 US dollars, which is lower than the local cost of living in Dili (Ministerio Finanças 2023). Financial pressure has become a core structural barrier that hinders retirement preparation. Based on these findings, this study proposes three intervention pathways: improving income stability, strengthening support for debt management, and expanding financial assistance programs.

4.3.3 Financial Attitude → Pre-Retirement Planning (H3)

This study tested its core hypothesis H3, and obtained empirical data of $\beta=0.31$, $p<0.001$, which confirms that financial attitude has a significant positive impact on pre-retirement planning among F-FDTL soldiers. In this study, financial attitude is defined as an individual's orientation toward saving, consumption, and long-term financial discipline. Between-group comparisons show that soldiers who adhere to regular savings and restrain excessive consumption have more structured retirement plans than their peers who prioritize short-term consumption. The underlying mechanism is explained using the Theory of Planned Behavior: attitudes shape intentions, and intentions drive behaviors. The conclusions of this study align with the findings of Potrich et al. (2016) and Fan et al. (2022), and supplement the argument proposed by Lawahery et al. (2024) that military culture and job discipline strengthen this effect. Against the background of this group's persistently low fixed income, the impact of their financial attitude is amplified. Therefore, this study proposes that it is necessary to strengthen financial discipline and foster a long-term orientation to improve retirement readiness.

4.3.4 Financial Literacy → Pre-Retirement Planning (H4)

The core empirical findings of this study show that financial literacy exerts a significant positive effect on pre-retirement planning among F-FDTL soldiers ($\beta=0.29$, $p<0.01$), which supports research hypothesis H4, that is, the higher an individual's level of financial knowledge, the more sufficient their retirement preparation. The financial literacy defined in this study refers to the ability to understand and apply financial concepts including interest rates, savings, investment, and pension systems. Among members of this group, individuals with higher financial literacy have significantly more complete planning behaviors than those with lower financial literacy. This paper draws on human capital theory (HCT) and life cycle theory (LCT) to explain the underlying mechanism: as a form of human capital, knowledge can improve decision-making quality, and financial literacy also supports individuals to allocate resources across life cycles, to start earlier and more sustained retirement planning. Previous studies by Lusardi & Mitchell (2023) and Xu & Jiang (2024) also corroborate this general pattern. Combined with the unique constraint of low accessibility to structured financial education for the F-FDTL group, the conclusions of this study have both theoretical support and contextual applicability.

4.3.5 FinTech → Financial Literacy (H5)

This study conducts an empirical analysis of the F-FDTL soldier population to examine the impact of fintech on their financial literacy. The core regression results show that the regression coefficient for fintech use is $\beta=0.29$, $p<0.001$, which supports the study's research hypothesis H5. The fintech use scenarios defined in this study cover three categories: mobile banking, e-wallets, and digital payment platforms, while the financial concepts that soldiers need to master include three categories: saving

behavior, transaction tracking, and budget planning. The mechanism underlying this effect is that fintech features including balance updates, consumption records, and savings summaries help users intuitively observe their financial patterns, and repeated daily use of these tools can strengthen their financial understanding. The survey carried out in this study finds that only 28% of F-FDTL soldiers use fintech regularly, access to digital finance learning opportunities is unevenly distributed, and fintech-using soldiers have better financial awareness than their peers who only rely on cash Lebcir et al. (2025) previously proposed that digital financial services can improve financial literacy through access to real-time information and experiential learning, while Ozili (2023) also points out that fintech serves the dual role of transaction tool and informal educational mechanism, which is well-suited for contexts that lack sufficient structured financial education. Based on these findings, this study proposes that if military institutions expand access to digital finance, they can narrow the financial literacy gap among soldiers and strengthen their preparation for retirement planning.

4.3.6 Financial Stress → Financial Literacy (H6)

The empirical test conducted in this study on a group of soldiers from the Timor-Leste Defense Force (F-FDTL) shows that financial stress exerts a significant negative effect on financial literacy, with a regression coefficient $\beta = -0.18$, $p < 0.05$, which supports research hypothesis H6. The underlying logic of this effect aligns with the core framework of Conservation of Resources Theory (COR, Hobfoll, 1989), and previous studies (Nawi & Hussin, 2021; (Ritchie & Gill, 2024) have also verified the generalizability of this conclusion. When combined with the characteristics of this group low incomes and frequent reliance on informal borrowing, it is clear that financial stress acts as a cognitive barrier that hinders improvements in financial literacy. Reducing financial stress can help these soldiers enhance their financial literacy and their ability to make long-term financial plans.

4.3.7 Financial Attitude → Financial Literacy (H7)

This study conducted a quantitative regression analysis using a sample of F-FDTL soldiers, and confirmed that research hypothesis H7 is valid. It found that financial attitude has a significant positive impact on financial literacy, with $\beta=0.33$ and $p<0.01$. This study defines financial attitude as an individual's value orientation toward saving, consumption, and long-term financial discipline. Specifically, soldiers who have a positive saving tendency and restrain short-term consumption are better able to acquire and apply financial knowledge. The study draws on the Theory of Planned Behavior to explain the underlying mechanism of this effect, and cites Kozol, (2025) to support the rationality of this path. As the sample group has limited formal education, the study's conclusions cannot be overgeneralized. Strengthening positive financial attitudes can drive soldiers to improve their financial literacy, which supports their preparation for retirement.

4.3.8 Literacy Mediates FinTech → Pre-Retirement Planning (H8)

The mediating effect test of this study shows that financial literacy plays a significant mediating role in the relationship between fintech and pre-retirement planning of F-FDTL soldiers, $\beta=0.11$, $p<0.05$, which supports the research hypothesis H8. When financial literacy is sufficient, fintech delivers a stronger effect to improve retirement planning. These tools, which cover mobile banking, electronic wallets, and digital financial services, can only exert their utility if users can correctly interpret and use relevant information. Studies by Nicolini, (2019), D. Xiao & Wang, (2021), and Xu & Jiang (2024) corroborate this logic. Combined with the current status of low fintech penetration rate among this group, this confirms that fintech can only generate practical value when matched with adequate financial literacy, and that users' knowledge level determines the actual usage effect of the technology.

4.3.9 Literacy Mediates Stress → Pre-Retirement Planning (H9)

This study conducted an empirical analysis using F-FDTL soldiers as its research sample. Its core findings verify that financial literacy plays a significant mediating role between this group's financial stress and pre-retirement planning, with quantitative results of $\beta=0.13$, $p<0.01$, which supports research hypothesis H9. We draw on Conservation of Resources (COR) theory to unpack the underlying mechanism of this effect: financial stress depletes individuals' cognitive and material resources, weakening their capacity for long-term planning, while financial literacy, as a protective resource, helps soldiers manage their income, ease anxiety, and sustain planning behaviors. The high prevalence of financial stress among this group stems from low fixed incomes and continuously rising living costs. The conclusions of this study are jointly corroborated by a classic study in the general finance field, Lusardi & Mitchell (2014), specialized military research by Henry Wasosa (2025), as well as Lim et al. (2014) and Xiao & Kim, (2022). Based on these findings, this paper proposes that military authorities can strengthen internal financial literacy programs to buffer the negative impacts of financial stress, boost resilience, and improve soldiers' retirement readiness.

4.3.10 Literacy Mediates Attitude → Pre-Retirement Planning (H10)

This study conducted empirical analysis using a sample of F-FDTL soldiers, and verified the mediating effect of financial literacy ($\beta=0.13$, $p<0.01$), which supports research hypothesis H10. This study defines financial attitude as cognition regarding saving, consumption, and long-term self-discipline, and posits that a positive attitude can only produce a tendency to plan; only with adequate financial literacy can individuals turn their intentions into concrete actions such as setting savings targets. This mechanism can be explained by the Theory of Planned Behavior, and is also corroborated by prior research by Dew & Xiao, (2011) and Chaulagain (2021). Drawing on insights from EBRI's 2024 Retirement Confidence Survey and the U.S. Army's 2026 Retirement Planning Guide, this study identified that some soldiers in the research sample held positive attitudes but were unable to develop formal plans due to insufficient financial literacy, which confirms that financial literacy is a core enabling factor.

5. CONCLUSION AND RECOMENDATION

5.1 Conclusion

This empirical study focuses on military settings in developing countries, taking F-FDTL soldiers as its research subjects and centering its analysis on the factors influencing these soldiers' pre-retirement planning. First, the study sorts out the influence mechanisms through which three core variables; fintech, financial stress, and financial attitude affect soldiers' pre-retirement planning. It clarifies that financial literacy, which plays both mediating and moderating roles, produces a dual effect: it can amplify the effects of positive variables, and also offset the negative impacts of financial stress. At the theoretical level, this study verifies the rationality of integrating five major theories, namely TAM, COR, TPB, HCT, and LCT, to explain retirement behavior in military contexts, extends existing research models to this specific scenario, and ultimately puts forward suitable, actionable improvement suggestions across two core dimensions: practical implementation and policy formulation.

Limitations: This study adopts a cross-sectional design. The use of self-reported data may introduce bias, the study sample is limited solely to F-FDTL soldiers, and the study's conclusions lack sufficient generalizability.

Future Research Directions: Based on this research on military personnel's financial behaviors conducted by the defense sector, and the original integrated analytical framework developed for this

study, the authors of this paper propose four actionable follow-up research directions: First, conduct longitudinal tracking of changes in the study sample's financial literacy and digital finance usage, to verify their causal impact on retirement outcomes; Second, carry out a comparative study of ASEAN's armed forces to expand the generalizability of the study's conclusions; Third, employ qualitative research to conduct an in-depth exploration of the underlying micro-level mechanisms; Fourth, extend the integrated analytical framework to other defense sectors to improve its explanatory power.

5.2 Recommendations

This study proposes a comprehensive welfare system for the military population that integrates three core modules: financial literacy, financial technology, and stress management. This system is to be advanced and implemented through three actionable initiatives: embedding financial literacy content into military training, having the Ministry of National Defense construct a supporting FinTech platform, and adopting three categories of intervention measures to address military personnel's financial stress.

5.3 Implications for Future Research

This research outlook proposes four implementable recommendations for future research: First, adopt a longitudinal design to capture the dynamic impacts of reading and writing skills and fintech use on retirement outcomes; second, conduct comparative research on ASEAN militaries to identify differences in welfare cultures; third, use qualitative methods to supplement quantitative findings and explore the financial stress and planning experiences of research subjects; fourth, test and refine the integrated framework across diverse national defense contexts to strengthen its theoretical and policy value.

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