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Internal and external locus of control in mediating financial behavior in students in Timor-Leste

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Abstract: This study examines the influence of internal and external locus of control as mediators of financial literacy, financial attitudes, financial beliefs, and financial behavior of students in Timor-Leste. This study uses a quantitative approach with a survey method to collect sample data from students throughout Timor-Leste. Structural equation modeling (SEM) analyzes the relationship between financial literacy, financial attitudes, financial beliefs, internal and external locus of control, and financial behavior. The study's results highlight the mediating role of internal and external locus of control in the relationship between financial literacy, financial attitudes, financial beliefs, and financial behavior of students in Timor-Leste. These findings can provide insight into the complex relationship between these factors in financial decision-making. Practical implications for educational institutions and policymakers in Timor-Leste, namely emphasizing the importance of considering internal and external locus control in financial literacy programs to improve students' financial behavior. This study aims to fill the knowledge gap about student financial literacy by expanding the understanding of the relationship between these factors.

Keywords: external locus control; financial literacy; financial attitudes; financial beliefs; financial behavior; internal locus control; students

1. Introduction

Educational programs are closely related to financial management, personal finances, and scholarships. The success or failure of a student's studies also depends on how the student manages his or her finances. Several students need help in their studies due to financial difficulties or need help managing their finances. Therefore, research on financial literacy among students in Timor-Leste is essential—one cause of study failure is minimal financial literacy.

This study investigates the relationship between financial literacy, financial attitudes, financial beliefs, and financial behavior among students in Timor-Leste. Previous studies have stated that financial knowledge, attitudes toward finance, and a person's confidence level in managing finances can affect their financial behavior. The purpose of this study is to address the knowledge gap in students' financial literacy. This is important because students need independent and appropriate financial management. Understanding the factors influencing their financial behavior is expected to help them manage their finances efficiently and effectively. In addition, it can help them manage their finances better during their studies.

Numerous studies have emphasized how crucial it is for students to handle their finances independently and make changes while attending school. Research by Xiao et al. (2009) and Lyons (2008) stated that students often experience their first

experience of borrowing money and paying off debts during their studies. According to Agarwalla et al. (2015), financial literacy, attitudes, and beliefs are significant determinants that influence individual financial behavior and support this. The association of financial literacy, financial attitudes, and financial beliefs with financial behavior among Timor-Leste college students is still largely unclear, as is the mediating function of internal and external locus of control. In contrast, an external locus of control will easily blame external sources beyond their control. Knowing how these psychological variables could affect the relationship between financial behavior, attitudes, and knowledge might help designers of successful financial education initiatives adapt to Timor-Leste's student population. The connection between financial behavior and financial literacy, attitudes, and beliefs has been extensively researched; however, more is needed about the mediating effects of internal and external locus of control regarding university students in Timor-Leste. Understanding the function of both locus of control as mediators in the interaction between these variables will provide deeper insight into the psychological factors that influence the financial behavior of university students in Timor-Leste. This knowledge is essential for designing more efficient and effective financial education programs according to the needs of university students in Timor-Leste. So that they can develop more efficient, effective, responsible, and directed financial behavior. Through examining the moderating impacts of both the internal and external locus of control, this study will provide deeper insights into the mechanisms underlying the relationship between financial literacy, financial attitudes, financial beliefs, and financial behavior of college students in Timor-Leste. However, this understanding is essential for financial institutions, educators, and legislators to develop interventions to promote responsible financial behavior and improve financial well-being among college students.

This study will offer deeper insights into the mechanisms behind the relationship between financial literacy, financial attitudes, financial beliefs, and financial behavior of college students in Timor-Leste by examining the mediating effects of internal and external locus of control. A more profound comprehension of how locus of control affects the connection between these factors will enable financial firms, academics, and policymakers to create more excellent and effective interventions tailored to the needs of college students in Timor-Leste. This research will deepen our knowledge of the variables influencing students' financial behavior and serve as a foundation for creating interventions that will enhance their financial well-being. This could contribute significantly to improving the economic well-being and social development of Timor-Leste as a whole.

2. Theoretical approach and hypotheses

2.1. Financial literacy against internal and external locus of control

Financial literacy is defined by the Organisation for Economic Co-operation and Development (OECD) as "a combination of awareness, knowledge, skill, attitude, and behavior necessary to attain personal financial well-being and make wise financial judgments" (Murarka and Oates, 2020). A person needs adequate financial literacy to control and manage their finances (Putri and Pamungkas, 2019), which contributes to helping individuals control themselves to avoid financial problems (Dyah, 2018).

Solid financial literacy can assist a person in becoming a more qualified external and internal locus of control (Khoirunnisa and Rochmawati, 2021). Sound financial management can encourage the growth of an internal and external center of control concerning financial decision-making (Prastiawan, 2018). Most studies on financial literacy variables have focused on the effects of certain sociodemographic traits, including age, family income, employment position, marital status, and educational attainment (Cucinelli et al., 2019). Recent studies indicate that students in Finland have a respectable degree of financial literacy (Vaahtoniemi et al., 2023).

An individual's internal and external locus of control to enhance financial control, including managing funds and storage, improves with increasing financial literacy. Based on this statement, the following theory is conceivable:

H1: Financial literacy positively and significantly impacts the University of da Paz Timor-Leste students' internal locus of control.

H2: Financial literacy positively and significantly impacts the University of da Paz Timor-Leste students' external locus of control.

The impact of attitudes regarding finance on internal and external locus of control.

Financial attitudes are primarily focused on the individual's perspective and evaluation of their financial behaviors. In essence, locus of control is the degree to which people think they influence the things that happen in their lives. There is a positive relationship between financial attitudes and financial levels (Herdjiono, 2016). Consequently, an external locus of control can exert internal and external influence on an individual's financial attitude. Considering the theoretical foundation and the results of previous studies, this study formulates the following hypotheses:

H3: There is a significant and positive correlation between financial attitudes and the internal locus of control of University of da Paz Timor-Leste students.

H4: Attitudes towards money at the University of da Paz Timor-Leste positively and significantly impact students' external locus of control.

Financial confidence's effect on locus of control.

According to research, people with greater confidence in their finances would be more capable of producing prudent financial judgments. Researchers have discovered that individuals with greater financial confidence will be better equipped to make prudent financial choices. The internal and external of one's financial confidence can affect one's locus of control. Internal locus of control is the idea that states that people believe they have influence over their circumstances and the way those circumstances work out. When someone has an external locus of control, they attribute their achievements to circumstances beyond their control. Thus, the following hypotheses are proposed:

H5: Financial confidence has a favorable and considerable impact on students' internal locus of control at the University of da Paz Timor-Leste.

H6: Financial confidence incredibly and considerably impacts students' external locus of control at the University of da Paz Timor-Leste.

Financial literacy's effect on students' financial behavior.

Financial literacy is among the most essential variables influencing students' motivation to invest while receiving very little attention in college (Ozdemir et al., 2021). This is the capacity to combine consciousness, aptitude, expertise, disposition, and behavior to make wise financial decisions and achieve personal financial well-being (Zaimovic et al., 2023). Financial literacy is the awareness, knowledge, skills, attitudes, and behaviors necessary to make wise financial decisions and achieve individual financial well-being, according to the OECD and International Network for Financial Education (INFE) (Swiecka et al., 2020). One must possess financial literacy to improve their level of life through knowledge of how to allocate and arrange their finances accurately and efficiently (Azizah, 2020). According to Masdupi et al. (2019), understanding one's financial attitude begins with financial literacy. According to Abdurrahman and Oktapiani (2020), having financial literacy is a skill that is necessary for prudent money management. Understanding finance significantly impacts students' financial attitudes; the more financially educated a student is, the more frugal they are with their money (Sholeh, 2019). Abdurrahman and Oktapiani (2020) have shown that financial literacy significantly impacts students' financial behavior. This results from the more deliberate financial behavior exhibited by students with high financial literacy levels. Due to a person's limited comprehension of financial literacy, Kusnandar and Kurniawan (2020) explained that financial literacy only partially influences financial behavior.

The gap between these variables can be seen in the fact that the level of comprehension of financial literacy has not been thoroughly socialized, so many students still need to understand the importance of managing finances. The difference between these factors indicates that many students still need to fully comprehend the need to manage their funds since the extent of financial literacy has not been adequately socialized. In this study, there is something new: education about financial literacy during the pandemic has increased among young people and the community. The increased socialization of financial literacy has made students familiar with financial management. Based on the earlier description, we have established the following hypotheses.

H7: Financial literacy positively and significantly impacts the University of da Paz Timor-Leste students' financial behavior.

Financial attitudes' effect on students' financial behavior.

Financial behavior is human behavior related to the management of funds, credit, and savings. Malaysian students have better performance in financial behavior, while Indonesian students have better performance in financial literacy (Mireku et al., 2023). The TPB argues that every person who acts has a purpose or objective driven by internal factors, specifically attitude, which lays the groundwork for studying how financial attitudes affect University of da Paz Timor-Leste students' financial behavior. In the words of Besri (2018), financial attitudes are a person's or an entity's state of mind towards money that is expressed in attitudes. Research by Besri (2018), Dewi (2017), and Herdjiono and Damanik (2016) indicates that financial attitudes influence financial behavior.

The hypothesis formulated given the explanation above is as follows:

H8: University of da Paz Timor-Leste students' financial behavior is positively and significantly impacted by their financial attitudes.

The impact of student financial behavior on financial confidence.

High self-confidence influences behavior, especially in financial matters. TPB explains that self-confidence influences a person's behavior (Ajzen, 1991). The findings of a study by Ramalho and Forte (2019), which demonstrate that financial confidence has a favorable impact on financial behavior, lend weight to this notion. The findings of Rizkiawati and Haryono's (2018) study also support the idea that financial behavior is positively influenced by financial confidence. High financial confidence will give someone a sense of responsibility and help them manage finances wisely. According to Tokar (2015), evidence links financial confidence to borrowing and saving habits.

Possessing a high degree of self-confidence has advantages. Therefore, self-confidence is an important part of decision-making behavior. Daniel and Timman (2006) argue that excessive investor confidence can influence their behavior to invest more in growing companies. Based on a study by Pal et al. in 2021, someone with strong financial confidence can get through difficult financial times. The following is the hypothesis that is developed considering the explanation above:

H9: Financial confidence positively and significantly impacts University of da Paz Timor-Leste students' financial behavior.

Internal locus of control's effect on students' financial behavior.

Locus of control impacts financial behavior based on TPB, which is an individual's evaluation of the ease and difficulty of a person of interest's behavior. Kholilah and Iramani (2013) assert that when individuals possess robust internal control, their financial behavior will improve to exercise internal self-control over how they use their money according to their necessities.

The person will also display good financial management behavior. This is corroborated by Novianti's research (2019), which demonstrates that locus of control favors financial behavior. An individual's internal locus of control is positively connected to financial behavior. The following is the hypothesis that is developed in light of the explanation given above:

H10: University of da Paz Timor-Leste students' financial behavior is positively and significantly impacted by an internal locus of control.

The impact of external control locus on students' financial behavior.

Those who think that events outside their control are to blame for their accomplishments will become better money managers and decision-makers. Thus, an external locus of control may impact an individual's financial behavior. Financial decisions can be made by those with a relative locus of control, according to Pinjisakikool (2017). Meanwhile, Kesavayuth et al. (2018) discovered that people with a locus of control are able to manage all financial risks and recognize the advantages of those that do exist. This is reinforced by Novianti's research (2019), which shows that locus of control can positively influence financial behavior. An individual's

external locus of control rises as their financial behavior does. This explanation serves as the foundation for the following hypothesis:

H11: Internal locus of control has a positive and significant influence on the financial behavior of students of the University of da Paz Timor-Leste.

3. Research methods

This study uses an explanatory research method to obtain a systematic, factual, and accurate picture of the facts, characteristics, and relationships between the variables studied (Sekaran and Bougie, 2013). The goal is to get a fundamental answer regarding cause and effect by analyzing the factors causing the phenomenon related to financial management problems and practices (Copper and Schindler, 2014).

Research variables

The variables used in this study examine the factors that influence a person's financial behavior, which are important in managing personal finances effectively. Each variable is divided into several specific indicators as follows:

Independent variables

Financial literacy (X1) is about a person's ability to understand basic financial concepts relevant to decision-making. The indicators are knowledge of the basics of finance, such as understanding the concepts of interest, inflation, and risk, and understanding risk and investment diversification, such as managing risk through diversification and different financial instruments. Financial management skills, namely the ability to make financial decisions that support financial well-being (Lusardi, 2012).

Financial attitude (X2), namely regarding a person's view of money from a psychological aspect, reflects the ability to plan and control finances. The indicators are control over personal budgets, such as the ability to prepare and comply with a budget, and long-term financial planning, namely the attitude in making future financial plans. Attitudes towards debt and savings include preferences for saving or going into debt in certain situations (Prihartono and Asandimitra, 2018).

Financial confidence (X3), namely a person's self-confidence in making financial decisions. The indicators are confidence in making financial decisions, facing financial risks, and facing pressure in certain financial situations (Palameta et al., 2016).

Mediating variables

Internal locus of control (Z1) is an individual's belief that he or she has control over the results obtained. The indicators are belief in personal control, independence in financial decisions, and readiness to take responsibility for financial consequences (Rotter, 1966). Meanwhile, external locus of control (Z2) is the belief that external factors influence the results obtained. The indicators are the view that fate or external factors determine the results, dependence on other parties in financial decisions, and the influence of family or friends in financial decision-making (Rotter, 1966).

Dependent variables

Financial behavior (Y) is the behavior of individuals in managing personal finances based on their skills. Indicators of financial behavior include personal cash

flow management, use of savings and investment instruments, debt control, and planning for emergencies (Kholilah and Iramani, 2013).

Operational definition

Independent variable (X1) financial literacy

This variable refers to a person's level of knowledge regarding personal financial management. Financial literacy is measured using several indicators: income management, expenditure planning, understanding of credit, knowledge of savings products, and insight related to investment (Ari, 2018).

Independent variable (X2) financial attitude

Financial attitude reflects a person's attitude towards managing their finances. This attitude is measured based on individual habits, including recording income and expenses, tendencies to use savings, saving for future needs, making long-term investments, and paying debts or bills regularly every month (Shim et al., 2009).

Independent variable (X3) financial confidence

Financial confidence shows individual confidence in facing and making decisions related to finances. The variable indicators include overall financial behavior, confidence in solving financial challenges, and confidence in calculating and managing financial aspects (Yudha and Martanti, 2020).

Mediation variable (Z1) internal locus of control

Internal locus of control measures the extent to which individuals believe their results come from themselves. Indicators include the perception that achievement is based on personal effort and hard work, the ability to solve problems independently, and the belief that skills and self-competence are the keys to success (Azizah, 2018).

Mediating variable (Z2) external locus of control

External locus of control indicates the belief that external factors are more decisive in determining the results experienced by individuals. The indicator is the ease of being influenced by suggestions or opinions of others. The perception that success is influenced by the environment, the view that external factors are more dominant in determining personal circumstances, and the tendency to follow external directions in making decisions (Azizah, 2018).

Dependent variable (Y) financial behavior

Financial behavior refers to an individual's behavioral patterns in managing personal finances. The indicators include the tendency to balance income and expenses, skills in financial decision-making, the influence of emotional aspects on financial decision-making, and the ability to consider rational financial principles in personal economic planning (Ari, 2018).

Population and sample

Population (*n*)

The population of this study was 1002 final-year students at three faculties of economics and business in Timor-Leste, namely Universidade Nacional Timor Lorosa'e, Universidade da Paz, and Universidade de Dili, with the following composition in **Table 1** below:

Table 1. Final-year students of the faculty of economics and business of universities in Timor-Leste.

University	Total Final Year Students of the Faculty of Economics per University in Timor-Leste
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Universidade Nacional Timor Lorosa'e	547
Universidade da Paz	336
Universidade de Dili	119
Total	1.002

Source: Administration and Finance of the University of Timor-Leste, 2023.

Sample (*n*)

Sampling using purposive sampling, namely a sample of final-year students of the management and accounting study program at three universities in Timor-Leste, because the three universities have the same study program. Determination of the sample using the Yamane formula (Rakhmat, 1998), namely as follows:

$$n = \frac{N}{N \cdot d^2 + 1}$$

where:

n = Number of samples.

N = Number of population.

*d*² = specified precision.

The population of final-year students of the faculty of economics at three universities is *N* = 1009 people, and the specified precision level is = 5%. Based on this formula, the number of samples (*n*) is obtained as follows:

$$\frac{1.002}{1.002 (0.05)^2 + 1}$$

$$n = 285.$$

The number of stratified sample members is done by taking samples proportionally random sampling, namely using the allocation formula shown in **Table 2** below.

Table 2. Final-year students of the faculty of economics and business universities in Timor-Leste.

University	Sample Proposition
Universidade Nacional Timor Lorosa'e	547/1.002 x 285 = 155
Universidade da Paz	336/1.002 x 285 = 96
Universidade de Dili	119/1.002 x 285 = 34
Total	285

Research instrument

Primary data is directly obtained from a list of statements in a questionnaire distributed to respondents. The data is collected through a survey, but the data studied is from samples taken from the population. Data collection uses Google forms or is distributed directly to respondents. Respondents' answers are in the form of choices from four existing alternatives using a Likert scale, namely: SS = Strongly Agree (Score 4), S = Agree (Score 3), KS = Less Agree (Score 2), and TS = Disagree (Score 1).

Data analysis technique

Descriptive analysis

Descriptive analysis aims to create a picture of the existing situation or event to accumulate data. According to Supangat (2007), the processing of descriptive statistics in research serves as a reference for determining the following classification:

$$P = \frac{X_{\max} - X_{\min}}{b} = \frac{R}{b},$$

Description:

P = Length of class each interval.

$X_{\max}$ = Maximum value.

$X_{\min}$ = Minimum value.

R = Range.

B = Number of classes.

The maximum value of the assessment is four, and the minimum value of the research is one. If the values are substituted into the previous equation, the following results are obtained:

$$P = \frac{4 - 1}{4} = 0.75.$$

Based on the results of the calculation of the class length for each interval, the assessment categories for the average arithmetic value are as follows: Disagree (1.00–1.74), Less Agree (1.75–2.49), Agree (2.50–3.24), and Strongly Agree (3.25–4.00).

Quantitative analysis with SEM

The model designed in this study consists of 1. latent/construct variables (unobserved variables) and 2. manifest variables (observed variables). The analysis technique for this study is structural equation modeling (SEM) in the form of AMOS Version 5.0/Amos Graph.

Processing stages with SEM

Financial literacy, financial attitude, financial confidence, and mediating variables of internal and external locus of control were selected based on previous literature and research that showed their influence on student financial behavior.

In this study, the path diagram describes the relationship between the independent variables financial literacy (X1), financial attitude (X2), and financial confidence (X3) to the mediating variables internal locus of control (Z1) and external locus of control (Z2), which influence student financial behavior (Y), as in **Figure 1** below.

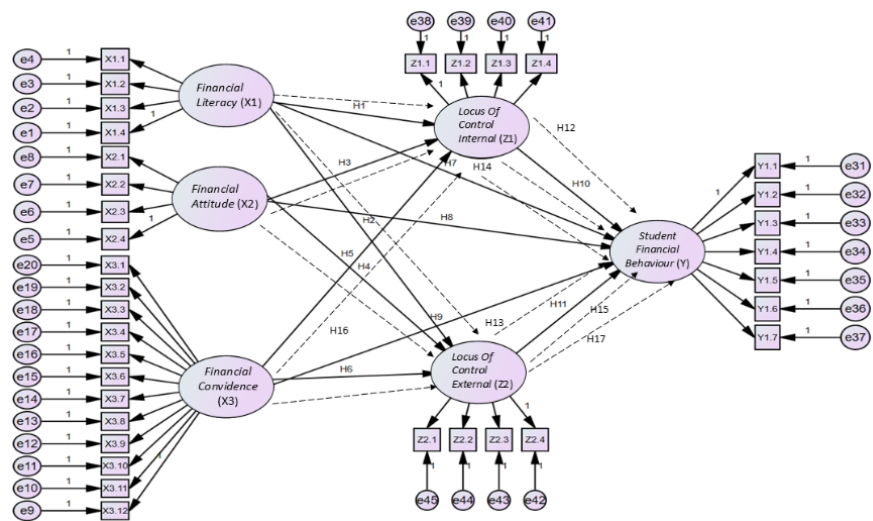


Figure 1. SEM Model.

Figure 1 shows the relationship model between variables, namely financial literacy (X1), financial attitude (X2), and financial confidence (X3), each of which has several indicators. Two mediating variables, namely internal locus of control (Z1) and external locus of control (Z2), mediate the influence of the independent variables on the dependent variable, namely student financial behavior (Y). This diagram illustrates the simultaneous influence of financial literacy, attitude, and self-confidence on financial behavior through self-control. The constructs built in the path diagram in **Figure 1** can be divided into two groups. Exogenous constructs as “source variables” or “independent variables” that other variables in the model do not predict. 2. Endogenous constructs are factors predicted by one or more endogenous constructs but can only be causally related. Converting the path diagram into an equation, then converting the model specifications into a series of equations consisting of 1. Structural equations are formulated to express the causal relationship between various constructs, and 2. In measurement models, variables that measure the constructs must be determined, and a series of matrices that show the hypothesized correlations between constructs must be determined. There are seven hypotheses to formulate the equation, namely:

- 1) Financial knowledge (PK) = β_1 PK_LOC + Z
- 2) Financial literacy (LK) = β_2 LK_LOC + Z
- 3) Financial attitude (SK) = β_3 SK_LOC + Z
- 4) Financial knowledge (PK) = β_4 PK_PPK + Z
- 5) Financial literacy (LK) = β_5 PPK + Z
- 6) Financial attitude (SK) = β_6 SK + Z
- 7) Locus of control (Loc) = β_7 LOC + Z

Description:

β_1 -15 = Estimation coefficient

Z = error

Selecting the input matrix and model estimation, observed variables are on the left side of each equation of the proposed measurement model and the right side for latent variables. The input data used by SEM-AMOS is the covariance matrix because it presents valid comparisons between different populations or samples that cannot be

presented by correlation. The identification problem is basically about the inability of the developed model to produce unique estimates. If every time an estimation is carried out, an identification problem arises, then the model should be reconsidered by developing many constructs.

- 1) Evaluation of the goodness of fit (GoF) criteria is a test of the model's suitability by reviewing various criteria (GoF). The following are some suitability indices and cutoffs to test whether the model is accepted or rejected (fit or not fit).
- 2) X² chi-square statistic. The smaller the X² value, the better the model is and is accepted based on probability with a cut-off value of $p > 0.05$ (5%) or $p > 0.10$ (10%) (Hulland et al. 1996 in Ferdinand 2006).
- 3) RMSEA (the root mean square error of approximation) assesses the model's suitability in the population. An RMSEA value smaller than or equal to 0.08 is an index for the acceptance of the model, indicating a close fit of a model based on the degree of freedom (Ferdinand 2000, 2006).
- 4) CMIN/DF, or square relative, is the result of dividing the minimum sample error function by its degrees of freedom, which measures the model's fit (Ferdinand, 2006). The expected CMIN/DF for the model to be accepted is ≤ 2.00 or 3.0, so if the model produces a value equal to or smaller than that number, then the model is an acceptable fit between the model and the data.
- 5) GFI (goodness of index). The goodness-of-fit index test determines the weighted proportion of variance in the sample covariance matrix explained by the estimated population covariance matrix (Bentler, 1983; Tanaka and Huba, 1989 in Ferdinand, 2002). The expected GFI is $GFI \geq 0.90$.
- 6) AGFI (adjusted goodness fit index). AGFI can adjust the fit index to the available pdf to test whether the model is acceptable. The expected result is ≥ 0.90 .
- 7) TLI (tucker lewis index). TLI is an alternative incremental fit index that compares a model being tested against a baseline model (Baumgartner and Homburg, 1996 in Ferdinand, 2002). The expected value is $TLI \geq 0.90$.
- 8) CFI (comparative fit index). This range is 0–1, where the closer to 1 compensates for chi-square in large samples (Baumgartner and Hamburg, 1996). A small RMSEA value equal to 0.80 is an index for the acceptance of the model, which shows a close fit of the model based on degrees (Browne and Cudeck, 1993).

Thus, the indices that can be used to test the feasibility of a model are summarized in **Table 3** below:

Table 3. Criteria in testing using SEM (goodness of fit index).

Goodness of-Fit Index	Cut-off Value
λ Chi-Square	It is expected that the value is small
Significance Probability	≥ 0.05
RMSEA	≤ 0.08
GFI	≥ 0.90
AGFI	≥ 0.90
CMIN/DF	≤ 2.00
TLI	≥ 0.95
CFI	≥ 0.95

Source: Ferdinand, 2022.

If it is found that the residual value generated by the model is quite large, namely > 2.58 , then modifications can be made by adding a new path to the estimated model. However, the addition of this path must be based on theoretical support. A residual value greater than or equal to 2.58 is interpreted as statistically significant at a cut-off value level of 5% (0.05).

The cutoff point used in this study is the Critical Ratio (CR) value and the calculated probability value (p -value). The criteria for rejecting the hypothesis are Hypothesis Rejected/Not Accepted if Critical Ratio Value < 2.0 and P -value > 0.05 . Hypothesis Not Rejected/Accepted if Critical Ratio Value > 2.0 and P -value < 0.05 (5%).

Validity test

The validity test uses confirmatory factor analysis (CFA), which aims to confirm the most dominant factors in a group of variables (factor numbers are obtained from loading factor λ). A question item is valid if the CR value > 2.0 indicates that the variables are significant dimensions of the latent factors formed (Ferdinand, 2002). Invalid questions will be removed and not analyzed, while valid questions will be continued to the reliability testing stage (reliability test).

Reliability test

Reliability is a measure of the internal consistency of the indicators of a construct that shows the degree to which each indicator indicates a common latent construct/factor. The minimum reliability value of the dimensions forming the latent variable that can be accepted is 0.7. The value of the level of reliability of the dimensions is obtained through the following formula (Ghozali, 2008):

$$\text{Construct Reliability} = \frac{(\sum \text{standard loading})^2}{(\sum \text{standard error})^2 + \sum E_j}$$

Standard loading is obtained directly from the standardized loading for each indicator (obtained from computer calculations using the Amos Graphics program). $\sum E_j$ is the measurement error of each indicator. Measurement error is obtained from 1. (standardized loading). 2. Variance extract shows the variance from the indicator extracted by the developed latent variables. The acceptable variance extract value is a minimum of 0.50. The variance extract equation is:

$$\text{Variance Extract} = \frac{\sum \text{standard loading}^2}{\sum \text{standard error}^2 + \sum E_j}$$

SEM assumption test

The assumptions that must be met in the data collection and processing procedure with SEM-AMOS modeling are as follows:

a. Outliers

Outliers are observations that appear with extreme values, both univariately and multivariately. Testing for the presence or absence of univariate outliers is done by analyzing the Z score value of the research data used. If a Z score value is in a range greater than ± 4 (Hair et al., 1995), then this is included in the outliers category. Meanwhile, multivariate outliers from the Mahalanobis distance can be tested at the multivariate level (Ghozali, 2008).

b. Data normality test

Data distribution must be analyzed to determine whether the normality assumption is met so that the data can be processed further for this SEM modeling. This normality test needs to be done for the normality of single data and multivariate normality, where several variables are used simultaneously in the final analysis. The normality test in this study was carried out by giving the test of normality and outliers command. The normality assumption will be rejected if the CR value is greater than the critical value of ± 2.58 at a significance level of 1% (Ghozali, 2008).

c. Analysis of research results

Distributing and collecting questionnaires took 15 days, from 24 November 2023 to 1 December 2023. A total of 243 respondents have filled out the questionnaire, which will then be analyzed using the structural equation modeling (SEM) method using the AMOS 24 software.

Research respondent profile

Of the 243 respondents, 140 (57.6%) were female and 103 (42.4%) were male. Of the 243 people studied, most of the respondents, namely 122 people (50.2%), were aged 20–35 years, 109 (44.9%) were aged < 20, 11 people (4.5%) were aged 36–50 years, and one person (0.4%) was aged > 50 years. Of the 243 people studied, most of the respondents, namely 171 people (70.4%), had income < 50 USD, 45 people (18.5%) had income > 51–100 USD, and 27 people (11.1%) had income > 100 USD. Most of the respondents, namely 134 people (55.1%), came from Universidade da Paz, 57 people (23.5%) came from Universidade Dili, and 52 people (21.4%) came from Universidade Nasional Timor Lorosae.

Variable description

a. Description of financial literacy variable

Respondents' assessment of the financial literacy variable is explained in **Table 4**:

Table 4. Description of financial literacy variable.

Financial Literacy Indicators	Statement Frequency								Mean	Std. Dev.
	4	%	3	%	2	%	1	%		
X1.1	162	66.7	76	31.3	3	1.2	2	0.8	3.6379	0.55347
X1.2	166	68.3	64	26.3	9	3.7	4	1.6	3.6132	0.64166
X1.3	168	69.1	69	28.4	2	0.8	4	1.6	3.6502	0.58658
X1.4	169	69.5	64	26.3	9	3.7	1	0.4	3.6502	0.57232
									3.6379	0.5885

The study results indicate that respondents' responses to the financial literacy variable agree (mean 3.6379) with the statements submitted in the research instrument.

b. Description of the financial confidence variable

Respondents' assessment of the financial confidence variable can be seen in the **Table 5**:

Table 5. Description of the financial confidence variable.

Financial Confidence Indicators	Statement Frequency								Mean	Std. Dev.
	4	%	3	%	2	%	1	%		
X2.1	164	67.5	73	30.0	3	1.2	3	1.2	3.6379	0.57543
X2.2	167	68.7	66	27.2	9	3.7	1	0.4	3.6420	0.57443
X2.3	165	67.9	71	29.2	6	2.5	1	0.4	3.6461	0.55135
X2.4	175	72.0	56	23.0	10	4.1	2	0.8	3.6626	0.59727
X2.5	180	74.1	59	24.3	2	0.8	2	0.8	3.7160	0.51988
X2.6	177	72.8	55	22.6	9	3.7	2	0.8	3.6749	0.58676
X2.7	185	76.1	54	22.2	1	0.4	3	1.2	3.7325	0.52858
X2.8	165	67.9	70	28.8	4	1.6	4	1.6	3.6296	0.60530
X2.9	172	70.8	66	27.2	2	0.8	3	1.2	3.6749	0.55788
X2.10	183	75.3	55	22.6	3	1.2	2	0.8	3.7243	0.52431
X2.11	164	67.5	70	28.8	5	2.1	4	1.6	3.6214	0.61378
X2.12	164	67.5	66	27.2	10	4.1	3	1.2	3.6091	0.62938
									3.6643	0.5720

The study results showed that respondents responded to the financial confidence variable tending towards agreement (mean 3.6643) to the statements submitted in the research instrument.

c. Description of the financial attitude variable

Respondents' assessment of the financial attitude variable is explained in **Table 6**:

Table 6. Description of the financial attitude variable.

Financial Attitude Indicators	Statement Frequency								Mean	Std. Dev.
	4	%	3	%	2	%	1	%		
X3.1	180	74.1	57	23.5	5	2.1	1	0.4	3.7119	0.52158
X3.2	172	70.8	63	25.9	6	2.5	2	0.8	3.6667	0.56773
X3.3	145	59.7	81	33.3	12	4.9	5	2.1	3.5062	0.68857
									3.6283	0.5926

The results of the study showed that respondents gave responses to the financial attitude variable tending towards agreement (mean 3.6283) to the statements submitted in the research instrument.

d. Description of the Internal locus of control variable

Respondents' assessment of the internal locus of control variable can be seen in **Table 7**:

Table 7. Description of the internal locus of control variable, internal locus of control.

Internal Locus of Control Indicators	Statement Frequency								Mean	Std. Dev.
	4	%	3	%	2	%	1	%		
Z1.1	176	72.4	62	25.5	2	0.8	3	1.2	3.6914	0.55242
Z1.2	174	71.6	66	27.2	1	0.4	2	0.8	3.6955	0.52011
Z1.3	180	74.1	60	24.7	0	0.0	3	1.2	3.7160	0.52777

Z1.4	174	71.6	60	24.7	6	2.5	3	1.2	3.6667	0.58916
									3.6924	0.5474

The study results showed that respondents responded to the Internal Locus of Control variable tending towards agreement (mean 3.6924) to the statements submitted in the research instrument.

e. Description of the external locus of control variable

Respondents' assessment of the external locus of control variable can be seen in **Table 8**:

Table 8. Description of the external locus of control variable.

External Locus of Control Indicators	Statement Frequency								Mean	Std. Dev.
	4	%	3	%	2	%	1	%		
Z2.1	113	46.5	119	49.0	9	3.7	2	0.8	3.4115	0.60592
Z2.2	110	45.3	122	50.2	10	4.1	1	0.4	3.4033	0.59083
Z2.3	115	47.3	119	49.0	7	2.9	2	0.8	3.4280	0.59436
Z2.4	101	41.6	126	51.9	13	5.3	3	1.2	3.3374	0.63743
									3.3951	0.6071

The study results showed that respondents responded to the External Locus of Control variable tending towards agreement (mean 3.3951) to the statements submitted in the research instrument.

f. Description of financial behavior variables

Respondents' assessments of the financial behavior variables can be seen in **Table 9**:

Table 9. Description of financial behavior variables.

Financial Behavior Indicators	Statement Frequency								Mean	Std. Dev.
	4	%	3	%	2	%	1	%		
Y1.1	179	73.7	61	25.1	2	0.8	1	0.4	3.7202	0.49364
Y1.2	185	76.1	53	21.8	4	1.6	1	0.4	3.7366	0.50265
Y1.3	170	70.0	71	29.2	1	0.4	1	0.4	3.6872	0.49888
Y1.4	180	74.1	57	23.5	4	1.6	2	0.8	3.7078	0.53880
Y1.5	179	73.7	56	23.0	7	2.9	1	0.4	3.6996	0.54192
Y1.6	71	29.2	158	65.0	14	5.8	0	0.0	3.2346	0.54405
Y1.7	102	42.0	133	54.7	4	1.6	4	1.6	3.3704	0.60530
									3.5938	0.5322

The study results showed that respondents responded to the financial behavior variable tending towards agreement (mean 3.5938) to the statements submitted in the research instrument.

Analysis of research results

Confirmatory factor analysis (CFA) test

Confirmatory factor analysis (CFA) is a measurement model evaluation method used to test the validity and reliability of latent constructs in research. The purpose of

the CFA test is to identify and eliminate indicators that do not provide a significant contribution to explaining the latent variables, as shown in **Figure 2** below:

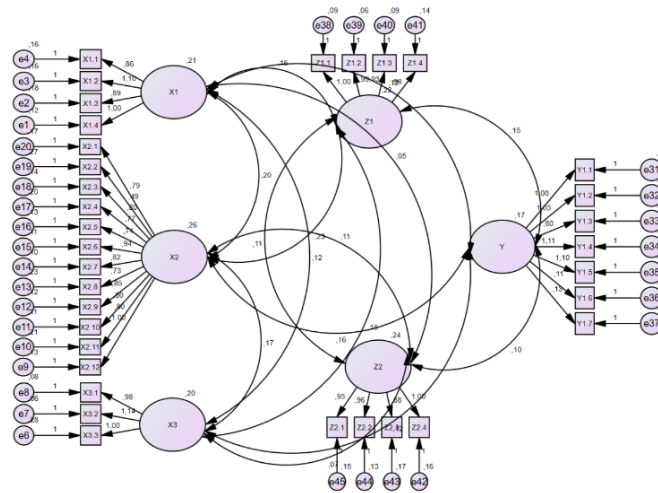


Figure 2. CFA test.

Validity and reliability test

This study uses confirmatory factor analysis on each latent variable using AMOS 24. The validity of the indicator of a variable is considered fulfilled if its loading factor is ≥ 0.50 and is significant at a 95% confidence level ($\alpha = 5.00\%$). In addition, the probability value of the loading factor must be less than 0.05%, indicating that the results have an adequate significance level. The use of confirmatory factor analysis and loading factor criteria is an effective way to assess the validity of an instrument. This study measured reliability using composite construct reliability, with a minimum cut-off value of 0.6. If the reliability value reaches or exceeds this threshold, the measuring instrument is reliable and provides reliable results. The following is **Table 10** of the results of the validity and reliability tests.

Table 10. Validity and reliability test.

Indicator	Loading Factor	Description	Construct Reliability	Description
X1.1	0.701	Valid	0.830	Reliable
X1.2	0.781	Valid		
X1.3	0.692	Valid		
X1.4	0.793			
X2.1	0.703	Valid	0.925	Reliable
X2.2	0.734	Valid		
X2.3	0.739	Valid		
X2.4	0.664	Valid		
X2.5	0.726	Valid		
X2.6	0.824	Valid		
X2.7	0.797	Valid		
X2.8	0.618	Valid		
X2.9	0.781	Valid		

X2.10	0.777	Valid		
X2.11	0.665	Valid		
X2.12	0.814	Valid		
X3.1	0.834	Valid		
X3.2	0.895	Valid	0.825	Reliable
X3.3	0.646	Valid		
Z1.1	0.846	Valid		
Z1.2	0.892	Valid	0.901	Reliable
Z1.3	0.821	Valid		
Z1.4	0.780	Valid		
Z2.1	0.775	Valid		
Z2.2	0.797	Valid		
Z2.3	0.724	Valid	0.850	Reliable
Z2.4	0.771	Valid		
Y1.1	0.839	Valid	0.797	Reliable
Y1.2	0.846	Valid		
Y1.3	0.667	Valid		
Y1.4	0.857	Valid		
Y1.5	0.842	Valid		
Y1.6	0.786	Valid		
Y1.7	0.686	Valid		

Based on the results of the SEM analysis in the validity test, it was found that all indicators could meet the validity requirements (loading factor > 0.5). Meanwhile, all constructs have passed the reliability test with a cut-off value greater than 0.6.

B. SEM assumption test

This test aims to check whether the prerequisites required in SEM modeling are met. These prerequisites involve assumptions regarding multivariate normality, absence of multicollinearity or singularity, and outlier detection. The multivariate normality assumption refers to the normal distribution of the measured latent variables. In addition, it is also essential to ensure that there are no multicollinearity or singularity problems between variables, which can affect the stability of the model. The data is assessed to ensure these conditions are met. If these prerequisites are met, then the results of the SEM analysis can be considered more reliable by the fundamental assumptions that support the validity of the model interpretation.

Normality test

The normality test is an essential step in univariate and multivariate data analysis. This test examines the statistical values of skewness and kurtosis, measured by the Critical Ratio (CR), at a significance level of 5%. The range of CR values accepted to ensure that the data is normally distributed is between -2.58 and 2.58 ($-2.58 < CR < 2.58$). In this study, the normality test results indicate that the CR value is within this range. Therefore, it can be concluded that the univariate data in this study can be considered normal. In addition, multivariate data can also be regarded as usual, as indicated by all CR indicator values that are between $-2.58 < CR < 2.58$. This

conclusion suggests that the data in this study meets the assumption of normality both univariately and multivariately, validating the use of further analysis techniques.

Outlier test

The outlier test is an observation with unique characteristics that are different from the others and appears in the form of extreme values, both for single and combination variables (Ferdinand, 2014). The Mahalanobis distance value of all observations must be below the chi-square table value of 0.001 with a total of 34 indicators; then, the Mahalanobis distance limit value is 293.7 for a sample of 243 respondents. The Mahalanobis distance number that is smaller than the critical number table indicates that there are no data outliers. From the outlier test results, it can be concluded that there are no outliers in the data. This is evidenced by the Mahalanobis distance value still below its critical number.

Structural equation model (SEM) analysis

The test results using the Amos version 26 application show the influence of financial literacy, financial confidence, and financial attitude on internal locus of control, behavioral intentions, and their impact on actual use.

Model suitability test (goodness of fit test)

The test on the SEM model aims to see the suitability of the model; the results of the model suitability test are presented in the following **Table 11**:

Table 11. SEM suitability index.

Criteria	Cut Off Value	Test Result	Description
CMIN/DF	< 2	1.542	Fit
Sig. Probability	≥ 0.05	0.065	Fit
RMSEA	≤ 0.08	0.047	Fit
GFI	≥ 0.90	0.920	Fit
RMR	≤ 0.05	0.015	Fit
TLI	≥ 0.95	0.950	Fit
CFI	> 0.95	0.961	Fit

Table 11 shows that one of the eight criteria is good, and the others are marginal. Ferdinand (2014) stated that based on the parsimony rule, if some model fit criteria are good, the model has been declared fit.

It is known that of the eight criteria, one criterion has good criteria and the others are marginal. Ferdinand (2014) stated that based on the parsimony rule, if some of the model fit criteria are good, then the model is declared fit as shown in **Figure 3**.

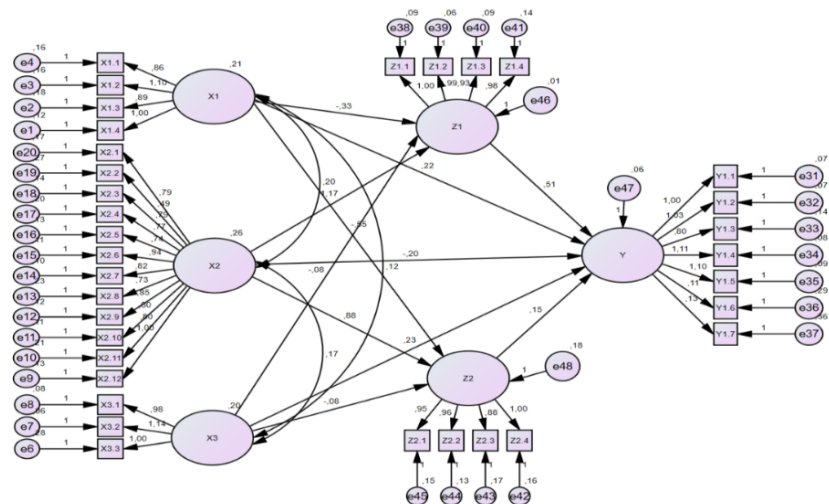


Figure 3. Model suitability test.

Hypothesis test

Next is to test the causality developed in this study. The causality test is used to test the influence of each hypothesis proposed. The detailed path coefficient test is presented in the following **Table 12**:

Table 12. Direct hypothesis test results.

			Estimate	S.E.	C.R.	P	Description
X1	---	Z1	−0.155	0.077	−2.019	0.044	Hypothesis accepted
X1	---	Z2	−0.318	0.148	−2.154	0.031	Hypothesis accepted
X1	---	Y	0.139	0.103	1.348	0.178	Hypothesis rejected
X2	---	Z1	1.093	0.089	12.218	***	Hypothesis accepted
X2	---	Z2	0.541	0.151	3.58	***	Hypothesis accepted
X2	---	Y	0.049	0.26	0.189	0.85	Hypothesis rejected
X3	---	Z1	−0.139	0.057	−2.423	0.015	Hypothesis accepted
X3	---	Z2	0.097	0.119	0.818	0.413	Hypothesis rejected
X3	---	Y	0.309	0.083	3.724	***	Hypothesis accepted
Z1	---	Y	0.253	0.205	1.238	0.216	Hypothesis rejected
Z2	---	Y	0.143	0.044	3.24	0.001	Hypothesis accepted

Based on **Table 12**, the interpretation of each path coefficient is explained as follows:

1) The effect of financial literacy on internal locus of control

Financial literacy was found to have a negative and significant effect on the internal locus of control, as evidenced by the c.r. value of -2.019 , which is greater than the required c.r. value of 1.96 , and a substantial probability (p) of 0.044 , which is smaller than the required significance level of 0.05 . The path coefficient has a negative value of -0.155 , which indicates that if financial literacy increases, it will decrease the internal locus of control and vice versa. If financial literacy is low, it will increase the internal locus of control. The results of the analysis accept the first research hypothesis (H1).

2) The effect of financial literacy on external locus of control

Financial literacy was found to have a negative and significant effect on external locus of control as evidenced by the c.r. value of -2.154 , which is greater than the required c.r. value of 1.96 , and obtained a considerable probability (p) of 0.044 , which is smaller than the required significance level of 0.05 . The path coefficient is negative at -0.318 , which indicates that if financial literacy increases, it will decrease the external locus of control and vice versa. If financial literacy is low, it will increase the external locus of control. The results of the analysis accept the research hypothesis (H2).

3) The effect of financial literacy on financial behavior

Financial literacy was found to have no effect and no significance on economic behavior, as evidenced by the c.r. value of 1.348 , which is smaller than the required c.r. value of 1.96 , and obtained a significant probability (p) of 0.178 , which is greater than the required significance level of 0.05 . The path coefficient is positive at 0.139 , indicating that financial literacy will increase financial behavior if it increases. The results of the analysis reject the research hypothesis (H3).

4) The effect of financial confidence on internal locus of control

Financial confidence was found to have a positive and significant effect on the internal locus of control, as evidenced by the c.r. value of 12.218 , which is greater than the required c.r. value of 1.96 , and a substantial probability (p) of 0.000 , which is smaller than the required significance level of 0.05 . The path coefficient is positive at 1.093 , indicating that if financial confidence increases, it will increase the internal locus of control and vice versa. If financial confidence decreases, it will decrease financial behavior. The results of the analysis support the research hypothesis (H4).

5) The effect of financial confidence on external locus of control

Financial confidence was found to have a positive and significant effect on the external locus of control, as evidenced by the c.r. value of 3.58 , which is greater than the required c.r. value of 1.96 , and a significant probability (p) of 0.000 obtained, which is smaller than the required level of significance of 0.05 . The path coefficient is positive at 0.541 , which indicates that if financial confidence increases, it will increase the external locus of control and vice versa. If financial confidence decreases, it will reduce the external locus of control. The results of the analysis support the first research hypothesis (H5).

6) The effect of financial confidence on financial behavior

Financial confidence was found to have no effect. It was not significant on financial behavior as evidenced by the c.r. value of 0.189 , which is smaller than the required c.r. value of 1.96 , and obtained a considerable probability (p) of 0.85 , greater than the required significance level of 0.05 . The path coefficient is positive at 0.049 , which indicates that if financial confidence increases, it will improve financial behavior and vice versa. If financial confidence decreases, it will reduce financial behavior. The results of the analysis reject the first research hypothesis (H6).

7) The effect of financial attitude on internal locus of control

Financial attitude was found to have a negative and significant effect on internal locus of control, as evidenced by the c.r. value of -2.423 , which is greater than the required c.r. value of 1.96 , and obtained a considerable probability (p) of 0.015 , which is smaller than the required significance level of 0.05 . The path coefficient is negative

at -0.139 , indicating that if financial attitude increases, the internal locus of control will decrease. The analysis results accept the research hypothesis (H7).

8) The effect of financial attitude on external locus of control

The financial attitude was found to have no effect. It was insignificant on the external locus of control, as evidenced by the c.r. value of 0.818 , which is smaller than the required c.r. value of 1.96 , and a substantial probability (p) of 0.413 obtained, greater than the required significance level of 0.05 . The path coefficient is positive at 0.097 , indicating that if financial attitude increases, it will increase the external locus of control. The analysis results reject the research hypothesis (H8).

9) The influence of financial attitude on financial behavior

Financial attitude was found to have a significant influence on financial behavior as evidenced by the c.r. value of 3.724 , which is greater than the required c.r. value of 1.96 , and obtained a significant probability (p) of 0.000 , which is smaller than the required significance level of 0.05 . The path coefficient is positive at 0.309 , which indicates that if financial attitude increases, it will increase financial behavior. The results of the analysis support the research hypothesis (H9).

10) The influence of internal locus of control on financial behavior

Internal locus of control was found to have no influence. It was not significant on financial behavior as evidenced by the c.r. value of 1.238 , which is smaller than the required c.r. value of 1.96 , and obtained a considerable probability (p) of 0.216 , greater than the required significance level of 0.05 . The path coefficient is positive at 0.253 , indicating that if the internal locus of control increases, it will increase financial behavior, and vice versa; if students' perceptions regarding the internal locus of control decrease, it will decrease internal financial behavior. The results of the analysis reject the first research hypothesis (H10).

11) The influence of external locus of control on financial behavior

External locus of control was found to have a significant influence on financial behavior as evidenced by the c.r. value of 3.24 , which is greater than the required c.r. value of 1.96 , and a substantial probability (p) of 0.001 is obtained, which is smaller than the required significance level of 0.05 . The path coefficient is positive at 0.143 , indicating that if the external locus of control increases, it will increase financial behavior. The results of the analysis support the research hypothesis (H11).

In addition to testing the direct effect, it is also necessary to test the indirect effect of the relationship between variable x and variable y , which is moderated by variable z . The test can be seen as follows **Table 13**:

Table 13. Indirect hypothesis test.

Relationship	Estimate	S.E.	C.R.	<i>P</i>	Description
$X1 \rightarrow Z1 \rightarrow Y$	-0.0392	0.077	-2.019	0.044	Hypothesis accepted
$X1 \rightarrow Z2 \rightarrow Y$	-0.0454	0.148	-2.154	0.031	Hypothesis accepted
$X2 \rightarrow Z1 \rightarrow Y$	0.2765	0.089	12.218	***	Hypothesis accepted
$X2 \rightarrow Z2 \rightarrow Y$	0.0773	0.151	3.58	***	Hypothesis accepted
$X3 \rightarrow Z1 \rightarrow Y$	-0.0352	0.057	-2.423	0.015	Hypothesis accepted
$X3 \rightarrow Z2 \rightarrow Y$	0.0139	0.119	0.818	0.413	Hypothesis rejected

12) The influence of financial literacy on students' financial behavior through internal locus of control

Financial literacy negatively and significantly affects students' financial behavior through internal locus of control as a mediator, as evidenced by the c.r. Value of -2.019 , which is greater than the required c.r. A value of 1.96 and a significant probability (p) of 0.044 are obtained, smaller than the required significance level of 0.05 . The indirect effect path coefficient is -0.0392 , which indicates that if financial literacy increases, it will impact students' financial behavior, tending to decrease through internal locus of control. The results of this analysis accept the research hypothesis that financial literacy has a negative and significant effect on students' financial behavior through internal locus of control.

13) The influence of financial literacy on students' financial behavior through external locus of control

Financial literacy negatively and significantly affects students' financial behavior through the external locus of control as a mediator, as evidenced by the CR value. -2.154 is greater than the required c.r. value of 1.96 , and a significant probability (p) of 0.031 is obtained, smaller than the required significance level of 0.05 . The indirect effect path coefficient is negative at -0.0454 , which indicates that if financial literacy increases, it will decrease students' financial behavior through the external locus of control. The results of this analysis accept the research hypothesis that financial literacy significantly affects students' financial behavior through external locus of control.

14) The effect of financial attitude on students' financial behavior through internal locus of control

Financial attitude has a significant effect on students' financial behavior through the internal locus of control as a mediator, as evidenced by the c.r. value of 12.218 , which is greater than the required c.r. value of 1.96 , and a significant probability (p) of 0.000 ($p < 0.05$), which indicates that this relationship is substantial. The positive indirect effect path coefficient is 0.2765 , indicating that if financial attitude increases, it will improve students' financial behavior through internal locus of control. The results of this analysis accept the research hypothesis that financial attitude significantly affects students' financial behavior through internal locus of control.

15) The effect of financial attitude on students' financial behavior through external locus of control

Financial attitude significantly affects students' financial behavior through external locus of control, as a mediator, as evidenced by the c.r. value of 3.580 , which is greater than the required c.r. value of 1.96 , and a significant probability (p) of 0.000 ($p < 0.05$), indicating that this relationship is substantial. The positive indirect effect path coefficient is 0.0773 , indicating that if financial attitude increases, it will improve students' financial behavior through external locus of control. The results of this analysis accept the research hypothesis that financial attitude significantly affects students' financial behavior through external locus of control.

16) The effect of financial confidence on students' financial behavior through internal locus of control

Financial confidence has a negative and significant effect on students' financial behavior through internal locus of control as a mediator, as evidenced by the c.r. value

of -2.423 , which is greater than the required c.r. A value of 1.96 and a significant probability (p) of 0.015 are obtained, smaller than the required significance level of 0.05 . The negative indirect effect path coefficient is -0.0352 , which indicates that if financial confidence decreases, it will have an impact on reducing students' financial behavior through internal locus of control. The results of this analysis accept the research hypothesis that financial confidence has a negative and significant effect on students' financial behavior through internal locus of control.

17) The effect of financial confidence on students' financial behavior through external locus of control.

Financial confidence has no effect and is not significant on students' financial behavior through external locus of control as a mediator, as evidenced by the c.r. value of 0.818 , which is smaller than the required c.r. A value of 1.96 and a significant probability (p) of 0.413 are obtained, which is greater than the required significance level of 0.05 , indicating that this relationship is not essential. The positive indirect effect path coefficient is 0.0139 , suggesting that although financial confidence increases, its effect on students' financial behavior through the external locus of control is insignificant. The results of this analysis reject the research hypothesis that financial confidence has a significant effect on students' financial behavior through external locus of control.

4. Results and discussion

The study's findings demonstrated a strong direct relationship between Timor-Leste college students' financial behavior and their beliefs, attitudes, and knowledge about finance. Furthermore, a relationship was found between financial literacy, financial attitudes, financial beliefs, and financial behavior. An internal locus of control partially mediates financial attitudes, beliefs, and behavior. Meanwhile, the external locus of control did not show a significant mediation effect.

4.1. Financial knowledge's effect on internal locus control

The results of the data analysis showed a strong correlation between financial literacy and internal locus of control. These results support the first hypothesis, which states that a person's degree of financial literacy significantly impacts how they see their internal locus of control. These results imply that the more financially literate a person is, the stronger their perception of internal control over their finances. Improving one's financial literacy may be vital in boosting one's comprehension and self-assurance in managing one's finances. However, people need adequate financial literacy to control their finances (Putri and Pamungkas, 2019). According to Braunstein and Welch (2002), poor money management and behavioral patterns can be caused by a lack of financial literacy that makes customers vulnerable to significant financial disasters (Ergün, 2017). Everyone dreams of living comfortably and avoiding financial problems (Dyah, 2018). The connection between internal locus of control and financial literacy reflects that those with more advanced financial literacy tend to have more robust internal control over the financial aspects of their lives. Financial literacy improves understanding of financial concepts, budget planning, investment, and financial risk management. Financially literate individuals may feel more

confident in determining finances and consider that they can manage their funds. As stated differently, financial literacy affects people's confidence in managing their finances and imparts helpful knowledge. Therefore, improving financial literacy is expected to strengthen internal control over financial aspects, helping individuals make better financial decisions and achieve better financial well-being.

The impact of financial literacy on internal locus of control in students in Timor-Leste illustrates that students with higher financial literacy typically feel that they have a strong sense of internal control over their financial matters. In this context, financial literacy plays a crucial role in shaping individuals' beliefs about their ability to manage and control their finances. Students with strong conceptual knowledge of finance, investment, and budget management will feel more confident when deciding on financial decisions, planning for the future, and managing financial risks. Thus, increasing students' financial literacy in Timor-Leste can improve financial understanding and strengthen the perception of internal control over financial aspects, improving financial well-being and making wiser financial decisions.

4.2. The impact of financial literacy on the external locus of control

Data analysis indicates a strong correlation between financial literacy and factors outside the locus of control. In other words, these results support the second hypothesis, which posits that an individual's view of financial knowledge significantly influences the external locus of control. According to these findings, people perceive external control over their finances as stronger as their financial literacy increases. There is a close relationship between financial literacy and external locus of control regarding personal financial management. In terms of financial literacy, a person's understanding and ability to handle their finances, including budget management, investment, and understanding of financial instruments. On the other hand, external locus of control is an individual's belief in the extent to which they have policies over their own lives. Individuals with an external locus of control tend to believe that their lives and financial decisions are influenced by external factors beyond their control, such as luck or circumstances. Therefore, financial literacy levels can impact how individuals feel they have control over their finances. Conversely, the perception of external control can affect motivation and efforts to increase financial literacy knowledge. With a good understanding of finance, individuals can feel more capable of managing their finances and reduce dependence on external factors, thus creating a complex relationship between financial literacy and external locus of control. When considering individual empowerment in managing personal money, it is possible to examine the impact of financial literacy on Timor-Leste students' internal locus of control. Suppose students have a high level of financial literacy, namely a good understanding of money management, investment, and financial planning. In that case, they feel more able to control and manage the financial aspects of their lives. As a result, their internal locus of control can increase, where they believe that their financial success is determined more by personal actions and decisions than external factors. This internal locus of control increase can positively impact students' motivation, responsibility, and independence in planning and achieving their financial

goals, creating a solid foundation for economic growth and sustainability in Timor-Leste.

4.3. The impact of financial literacy on financial behavior

The data analysis demonstrated no relationship between financial behavior and financial literacy factors. Stated differently, these findings refute the third hypothesis, which posits that an individual's judgments of financial behavior are genuinely influenced by their level of financial knowledge. These findings suggest that an individual's financial behavior is less affected by their degree of knowledge about finances. Financial literacy cannot be the primary means of enhancing people's comprehension and self-assurance regarding their financial conduct. A significant relationship exists between people's financial behavior and their degree of financial literacy, which helps explain the impact of financial knowledge on financial behavior. Someone with a high degree of financial literacy typically makes better financial decisions that are more sensitive to their current financial situation. Those with solid financial literacy typically have a superior ability to manage debt, create budgets, and make prudent investment decisions. However, adequate knowledge of finance can lead to better financial choices, like avoiding careless spending, trouble saving money, or ignorance of financial risks. Therefore, the connection between financial behavior and financial literacy reflects the contribution of financial understanding to better and more stable financial behavior.

The study examines how students' financial knowledge, attitudes, and behaviors are impacted by their financial understanding (Kumar and Priyadarshani, 2021). The impact of financial knowledge on individuals' financial behavior of students in Timor-Leste reflects the correlation between financial understanding and the financial behaviors they exhibit. Students with financial literacy are highly correlated with exhibiting more responsible and prudent financial behaviors. They may be better able to plan budgets, properly handle financial resources, and make more informed financial decisions. In contrast, students with low financial literacy may need help managing their finances, including unplanned expenses, difficulty saving, or insufficient knowledge of investments. As a result, raising students' financial awareness can help with non-negative changes in their financial behavior, helping to create financial stability and independence. Despite this, the study indicates no discernible effects of financial literacy on Timor-Leste students' financial behavior. The significance of financial of financial literacy is still valid. Other factors may contribute to shaping students' financial behavior in the region, such as the influence of the social environment, culture, or psychological aspects excluded from the measured financial literacy dimensions. Therefore, it is necessary to include additional variables in further research to gain a more holistic understanding of the factors influencing how students handle their money in Timor-Leste and to design financial education programs that are more appropriate to the context.

4.4. Financial confidence's effect on internal control

The fourth hypothesis, which states that financial confidence affects the internal locus of control, is accepted because the data analysis's results show that the financial

confidence variable significantly affects consumers' "internal locus of control." According to this analysis, the internal locus of control increases with financial confidence, as indicated by the positive coefficient value. The relationship between financial confidence and internal locus of control indicates that a person's level of financial confidence can affect the extent to which individuals feel they possess authority over their lives and financial decisions. Individuals with high levels of financial confidence tend to feel more empowered and have substantial control over their financial situation. They may be more confident in taking risks or making investment decisions because of the self-assurance in their financial capacity. Conversely, those with inadequate financial confidence may feel less in control and rely more on external factors or luck in financial decisions. Therefore, increasing the degree of financial confidence can be an essential factor in increasing an individual's perception of self-control, building a powerful internal center of control, and, in turn, positively impacting their financial decisions and well-being. The effect of financial confidence on internal locus of control in students in Timor-Leste shows that an individual's level of financial confidence can affect the extent to which they feel they possess authority over their lives and financial decisions. High-confidence students in their finances tend to feel more empowered and confident in managing their finances and viewing financial decisions. As a result, finances were decided based on personal ability and control. By increasing financial confidence, students can develop a strong internal locus of control, providing positive encouragement for wiser financial decision-making and strengthening self-control regarding their financial aspects.

4.5. Financial confidence's effect on financial behavior

The data analysis demonstrated no discernible relationship between financial behavior and confidence variables. The analysis's findings conclude that the fifth hypothesis can be accepted, stating that financial confidence substantially impacts the external locus of control. The coefficient value is positive, making sense that the higher the financial confidence, the greater the external control locus. The relationship between financial confidence and external locus of control reflects the complexity of individual psychology in managing finances. Financial confidence refers to a person's belief in managing finances effectively. Individuals with high financial confidence believe they can overcome financial challenges and make wise financial decisions. However, external locus of control describes an individual's belief in the influence of external factors in controlling their lives and finances. Individuals with a strong external locus of control may have low financial confidence, as they may feel less able to overcome financial obstacles and are more likely to blame external factors. Therefore, efforts to improve financial confidence may involve developing an internal locus of control, where individuals feel more in control of their financial decisions and actions, thereby creating a healthier balance between financial self-efficacy and perceptions of internal control. The interplay between financial confidence and external locus of control involves a complex dynamic between an individual's belief in their ability to manage finances and their views on the influence of external factors. Financial confidence, as a measure of an individual's belief in their ability to make financial decisions, can moderate or change the external locus of control. Suppose

someone has a high level of financial confidence. In that case, they may be more likely to have an internal locus of control view, which is the belief that personal actions and decisions can affect financial outcomes. In contrast, individuals with low financial confidence may rely on external factors and experience a dominant external locus of control. In this context, efforts to increase financial confidence can positively impact individuals' shift towards internal control, improving their ability to manage finances and overcome financial challenges more effectively.

4.6. Financial confidence's effect on financial behavior

The data analysis demonstrated no discernible relationship between financial behavior and confidence variables. These results reject the sixth hypothesis, which states that the level of financial confidence influences individuals' perceptions of financial behavior. These results indicate that the higher a person's financial confidence level, the less it will affect their financial behavior. The implication is that increasing financial confidence cannot be the key to increasing individuals' understanding and confidence in their financial behavior. The relationship between financial confidence and financial behavior in students in Timor-Leste reflects the relationship between an individual's financial confidence and financial behavior. Students with high levels of financial confidence tend to exhibit more positive financial behaviors. Strong financial confidence gives students the impetus to take proactive steps in achieving their financial goals. Therefore, increasing financial confidence is critical in shaping more positive financial behaviors for students in Timor-Leste. The relationship between financial confidence and financial behavior among students in Timor-Leste shows the relationship between an individual's financial confidence level and financial behavior. Higher financial confidence levels correlate positively with more positive and organized financial behavior. Financially confident students may be more likely to make intelligent financial decisions, including sound financial planning, wise debt management, and better investments. Therefore, the results of this study highlight the importance of strengthening students' financial confidence to improve more positive and sustainable financial behavior in Timor-Leste. The study's findings suggest that students' financial behavior in Timor-Leste is not significantly impacted by financial confidence; this does not imply that financial confidence has no effect. Other factors may play a role in shaping students' financial behavior in the region. Culture, education, and social environment influence how students respond to and manage their financial confidence. Although the relationship between financial confidence and financial behavior is not proven to be significant in the context of this study. Further research and in-depth analysis of other variables that may play a critical role can provide a more comprehensive understanding of the factors that influence financial behavior in Timor-Leste.

4.7. The effect of attitude towards finance on internal control

The data analysis shows that the financial attitude variable significantly influences the internal locus of control. Based on the results of the analysis, the seventh hypothesis, stating that financial attitude significantly affects the internal locus of control, can be accepted. The coefficient value shows a negative value, so it can be

explained that the higher a person's financial attitude, the lower the internal locus of control. The study's findings demonstrate a substantial correlation between Timor-Leste students' internal locus of control and financial attitudes. This indicates that students' attitudes or views on finance, such as beliefs about financial values, perceptions of the benefits of financial planning, and positive evaluations of financial management, can influence the extent to which students feel they have control over their financial destiny or decisions. In other words, students with positive attitudes toward financial aspects tend to feel they have higher internal control over financial events. This finding can provide essential insights for developing financial education programs that emphasize increasing financial knowledge and focus on the role of attitudes and perceptions toward finance in shaping internal control over financial decisions. The study's findings show that their financial attitudes significantly impact Timor-Leste students' internal locus of control. This means that students' attitudes or views on financial aspects, such as financial values, the benefits of financial planning, and positive evaluations of financial management, can influence the extent to which students feel they have internal control over their financial decisions. Students who have a positive attitude towards financial aspects are more likely to feel they have greater control over the financial events in their lives. This finding provides important implications for the development of financial education programs in Timor-Leste.

4.8. The influence of financial attitude on external locus of control

The results of the data analysis show that the variable "financial attitude" has an insignificant influence on the "external locus of control"; thus, the eighth hypothesis stating that financial attitude influences the external locus of control is rejected. The positive coefficient value in this analysis indicates that the higher the financial attitude, the higher the external locus of control. The relationship between financial attitude and external locus of control reflects that an individual's attitude toward finances can influence their perception of self-control over financial circumstances. Financial attitude encompasses an individual's attitudes, values, and beliefs about money and finances. Individuals with a positive financial attitude may be more likely to have an internal locus of control, believing that personal actions and decisions are crucial in achieving financial success. In contrast, individuals with a pessimistic financial attitude may rely on external factors and experience a dominant external locus of control. A positive understanding of finances can encourage one to take control of financial situations. At the same time, a negative attitude can reinforce the view that factors outside of an individual's control are more determinant of financial success. In order to increase financial awareness and empower individuals to manage their finances, it is necessary to pay attention and motivate them to develop a positive attitude toward money, which can help strengthen the internal locus of control and reduce dependence on external factors. The effect of financial confidence on the external locus of control of Timor-Leste students may illustrate the complex dynamics between an individual's financial beliefs and perceived control over external factors. Suppose students have high levels of financial confidence. In that case, they may feel more internal control over their financial decisions, perceiving that personal actions and decisions play a central role in determining their financial success. Therefore,

efforts to improve financial confidence among Timor-Leste students positively impact increasing internal locus of control, helping them feel more capable of managing their finances and less dependent on external factors they may not wholly control. Increasing financial awareness and strengthening financial self-efficacy can be crucial in empowering students to achieve their financial goals. The insignificant effect between financial confidence and external locus of control among Timor-Leste students reflects that the level of financial confidence does not substantially affect their perception of control over external factors. In this context, although students may have high levels of financial confidence, this does not directly affect their views on the extent to which external factors influence their financial success. Cultural factors, social environment, or personal experiences may contribute to the complexity of the relationship between financial confidence and external locus of control among Timorese students. Further understanding the cultural context and external factors that influence individuals' financial perceptions is essential for developing more effective approaches to improving financial awareness and strengthening internal locus of control among students in Timor-Leste.

4.9. Financial attitude's effect on financial behaviour

The data analysis shows a strong correlation between financial behavior and attitude variables. Put another way, this finding supports the ninth hypothesis, which holds that people's views of financial behavior are significantly influenced by their level of financial attitude. This result indicates that the higher a person's financial attitude, the more it will affect their financial behavior. The implication is that improving financial attitudes can improve individuals' understanding and confidence in their financial behavior. The findings indicate a substantial correlation between Timor-Leste students' financial behavior and attitude. These findings indicate that positive attitudes or views towards financial aspects, such as financial values, benefits of financial planning, and positive evaluations of financial management, can influence students' financial behavior. Students with positive attitudes towards finance tend to demonstrate better financial behaviors, such as wise money management, mature financial planning, and adherence to sound financial principles. This highlights the importance of understanding and managing attitudes towards finance as a critical factor in shaping sound financial behaviors among students, which can be used to design more effective and relevant financial education programs. The study's findings show that their views on money significantly influence Timor-Leste students' financial behavior. This means that students' attitudes or views towards financial aspects, including financial values, benefits of financial planning, and positive evaluations of financial management, can shape students' financial behavior. Students with positive attitudes towards finance tend to demonstrate better financial behaviors, including wiser money management decisions, better financial planning, and adherence to sound financial principles. These findings imply that efforts to increase positive attitudes towards finance may be an effective strategy in improving the financial behavior of students in Timor-Leste, and this may form the basis for the development of more effective financial education programs at the tertiary level.

4.10. Internal locus of control's effect on financial behavior

The data analysis's findings demonstrate no discernible relationship between the internal locus of control variable and financial behavior. The analysis's findings conclude that the eleventh hypothesis is rejected, which holds that the internal locus of control significantly influences financial behavior. Given that the coefficient value is positive, it makes sense that the greater the external locus of control that the Timorese people possess, the better their financial behavior will be. The study's findings indicate a strong correlation between Timor-Leste students' financial behavior and their internal locus of control. This finding indicates that students who tend to have internal control or believe they have control over their decisions and actions tend to show better financial behavior. Individuals with a high internal locus of control may feel entirely responsible for their financial decisions and are actively involved in personal financial planning and management. This reflects the importance of psychological dimensions, such as perceptions of self-control, in shaping positive financial behavior among students. The implication is that financial education programs can be more effective if they consider the aspect of internal control in designing appropriate strategies and approaches to help students develop wiser and more responsible financial behavior. The study's findings show that internal locus of control does not impact Timor-Leste students' financial behavior. This result suggests that students who have a certain degree of internal locus of control do not significantly contribute to their financial behavior patterns. In this context, other factors may have a more dominant role, or there may be mediator variables that can moderate the correlation between Timor-Leste students' financial behavior and internal control. The implication is that in order to design more effective financial education interventions or programs, it is essential to thoroughly understand the factors that can influence students' financial behavior and not only focus on the internal locus of control dimension. Thus, further research can explore additional factors that may moderate or mediate the correlation between Timor-Leste students' financial behavior and internal control.

4.11. External locus of control's effect on financial behavior

The data analysis's findings show that the external locus of control variable significantly influences financial behavior. Based on the results of the analysis, the eleventh hypothesis, stating that the external locus of control significantly influences financial behavior, can be accepted. The coefficient value shows a positive value, so it can be explained that the higher the external locus of control owned by students in Timor-Leste, the higher the financial behavior. The study's findings strongly correlate students' financial behavior and external locus of control in Timor-Leste. This finding suggests that students who perceive events in their lives are more influenced by external factors or luck rather than personal effort and ability tend to have different financial behavior patterns. Students with high external control likely tend to be less proactive in managing their finances and more dependent on factors beyond their control. The implication is that the design of financial education programs in Timor-Leste can be more effective by considering this external control dimension and including strategies that can increase student awareness and involvement in managing their finances more actively. In addition, this relationship can also be a basis for further

understanding the factors that may mediate or moderate the relationship between external control and student financial behavior. The study's findings show a strong correlation between students' financial behavior and their external locus of control. This finding indicates that students who tend to believe that events in their lives are more determined by external factors or luck than by personal effort and ability have different financial behavior tendencies. They may be more passive in managing their finances, relying on factors beyond their control. This implies that financial education initiatives in Timor-Leste should aim to enhance students' financial behavior, and attention needs to be paid to this aspect of external control. Efforts to increase awareness of the importance of personal responsibility and internal control in managing finances can be integrated into these programs. In addition, these results provide a basis for further investigation into factors that may mediate or moderate the relationship between external control and students' financial behavior.

4.12. Theoretical findings

The study's conclusions provide significant theoretical insights into how particular factors affect internal, external, and financial behavior elements of the locus of control. In particular, financial literacy, confidence, and attitude play a significant part in forming students' perceptions of internal and external control. It was found that financial literacy, financial confidence, and financial attitude significantly influenced internal locus of control. This shows that students with sound financial understanding, self-confidence in managing finances, and a constructive outlook on finances tend to have more internal control over their lives and financial decisions. Furthermore, financial literacy and confidence also influence external locus of control. This indicates that students with high levels of financial literacy and self-confidence in finances may view their lives and finances as the result of personal effort and ability. However, financial attitude was not found to significantly affect the external locus of control. This suggests that attitudes towards finances may not directly influence students' perceptions of external factors in their lives. Interestingly, financial literacy, confidence, and internal locus of control did not significantly affect financial behavior. These findings imply that although students have good financial understanding, self-confidence, and internal control, they do not necessarily directly reflect better financial decisions and behavior. This implies that more variables might influence how people behave financially, and further research is needed to explore this. Finally, financial attitude was found to affect students' financial behavior significantly. This suggests that attitudes toward finance, or how students perceive the significance of finance aspects in their lives, play a key role in shaping financial behavior. Financial education programs should concentrate more on fostering positive attitudes toward finance to improve students' financial behavior in Timor-Leste.

4.13. Practical findings

The results can add to the body of knowledge already in existence, especially about the importance of the internal locus of control in influencing students' financial behavior in Timor-Leste. The mediating role of internal locus of control suggests that those with more authority over their financial outcomes tend to exhibit responsible

financial behavior even when faced with external challenges or limitations. The study's findings offer important practical implications for creating educational initiatives in finance and student empowerment in Timor-Leste. The results demonstrating the substantial impact of financial literacy, self-assurance, and financial perspective on internal locus of control suggest that initiatives to enhance financial literacy, self-confidence, and positive attitudes toward finance can positively influence students' internalizing control over their lives and financial decisions. Research indicates that financial confidence and literacy majorly impact the external locus of control in the external setting. Increasing financial literacy and self-confidence in managing finances can help students see their lives as the result of personal effort and ability. This can be the basis for motivating them to accept accountability for their financial decisions. Even though there is no appreciable correlation between financial attitude and external locus of control, this study can provide valuable insights. A more focused approach is needed to dig deeper into the relationship between attitudes toward finance and perceptions of external factors in students' lives. However, the findings show that an internal locus of control does not impact financial literacy, confidence, and behavior much. Indicate that other factors can influence students' financial decisions. Therefore, financial education programs for students in Timor-Leste can be enriched by considering other aspects, such as developing financial decision-making skills, understanding risks, and improving long-term financial planning skills. In order to improve students' financial behavior, a holistic and diverse approach is needed, which includes strengthening financial literacy, increasing self-confidence, forming a constructive outlook on finance, and improving financial decision-making skills. The findings of this research can form a foundation for creating more focused and successful intervention plans in Timor-Leste.

5. Conclusion

Emphasizes the need to consider locus of control in designing interventions to improve financial behavior. Advocate for financial education programs that address specific beliefs and external factors influencing financial behavior among Timor-Leste University students. In the future, financial institutions, educators, and legislators in Timor-Leste should consider implementing interventions that support university students' internal management of their financial outcomes in addition to conventional courses on financial education. By giving students the tools to manage their money decisions and actions, we can help them become more financially stable and support Timor-Leste's general economic growth. The study's findings will significantly impact how financial strategies and interventions are developed in the future. Use the following conclusions as a road map for your following actions. The study's conclusions stress how crucial it is to consider both loci of control when creating interventions to enhance financial behavior. By recognizing the mediating role of locus of control, policymakers and practitioners can design more targeted programs to achieve a more significant impact. This study suggests the importance of financial education programs tailored to the context and characteristics of students in Timor-Leste. These programs should consider specific beliefs and external factors influencing students' financial behavior. A more focused approach could be more

effective in improving financial literacy and changing students' financial behavior. Furthermore, the findings emphasize the necessity of a thorough strategy to comprehend and manage the variables influencing financial behavior. Therefore, in the future, there is a need to develop more sophisticated conceptual models and intervention methods that are appropriate to the complex dynamics involved in financial decision-making. By understanding these consequences, we can take practical steps to improve Timor-Leste students' financial literacy and behavior and design relevant and effective educational programs to support their financial management.

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