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Financial Literacy, Artificial Intelligence and Sustainable Investing: Evidence from University Students in Denmark

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FINANCIAL LITERACY, ARTIFICIAL INTELLIGENCE AND SUSTAINABLE INVESTMENT PREFERENCES

Evidence from University Students in Denmark

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CHAPTER 1 — INTRODUCTION

1.1 BACKGROUND AND MOTIVATION

Financial decision-making has become more complex as financial markets and digital services expand and individuals assume greater responsibility for saving, borrowing, investing, and long-term planning. In this context, financial literacy is increasingly important for understanding alternatives, risks, and the consequences of personal financial choices.

Research and policy institutions therefore treat financial literacy as a key component of individual financial capability. Higher financial knowledge is generally associated with a stronger ability to evaluate financial alternatives and make informed decisions.

University students are a particularly relevant group because they are moving towards greater financial independence while beginning to manage budgets, savings, and investments. Yet young adults often show gaps in basic financial knowledge.

At the same time, Artificial Intelligence (AI) is transforming financial services through applications such as automated advice, portfolio optimisation, risk assessment, and algorithmic decision-making. These tools may improve efficiency and accessibility, but their adoption depends partly on whether users are willing to trust them.

Trust is especially important in finance, where decisions involve uncertainty and personal responsibility. Concerns about transparency, reliability, and the absence of human judgement may therefore shape acceptance of AI-assisted financial services.

Sustainable investing adds another dimension to financial decision-making by incorporating Environmental, Social, and Governance (ESG) considerations alongside expected risk and return.

Financial literacy may help individuals understand investment products and evaluate sustainable choices, although the relationship between financial knowledge and sustainable investment preferences remains less established among younger investors.

This thesis examines financial literacy, financial confidence, trust in AI, and sustainable investment preferences among university students connected to the Danish higher education context. It combines a survey with an AI information treatment to compare trust in AI-assisted financial decision-making across two conditions.

The study therefore connects financial knowledge, technological innovation, and sustainable investment preferences within one empirical framework.

1.2 RESEARCH PROBLEM

Previous literature provides extensive evidence on financial literacy and financial behaviour, but several questions remain relevant for university students.

First, objective financial knowledge and subjective confidence are distinct dimensions of financial capability. Examining their relationship helps assess whether greater knowledge is accompanied by greater perceived ability to make financial decisions.

Second, the expansion of AI-based financial services raises questions about user acceptance. This study therefore examines whether exposure to information about AI applications is associated with greater reported trust in AI-assisted decisions.

Third, although sustainable investing has received increasing attention, the relationship between financial literacy and sustainable investment preferences among young adults remains less clear.

Accordingly, the study asks:

How are financial literacy, financial confidence, AI trust, and sustainable investment preferences related among university students, and how does reported AI trust differ across the two information conditions?

1.3 RESEARCH OBJECTIVES

The study investigates financial literacy, financial confidence, attitudes towards Artificial Intelligence, sustainable investment preferences, and previous financial education among university students.

Its objectives are to:

1. measure objective financial literacy among respondents;

2. examine its association with financial confidence;

3. compare AI trust across the information and control conditions;

4. examine the association between financial literacy and sustainable investment preferences; and 5. assess whether previous financial education is associated with higher financial literacy.

Together, these objectives provide an integrated view of knowledge, technology, and sustainability in young adults' financial attitudes.

1.4 RESEARCH QUESTIONS

The analysis addresses five research questions:

RQ1: What is the level of financial literacy among Danish university students?

RQ1 provides a descriptive assessment of basic financial knowledge.

RQ2: Is financial literacy associated with greater confidence in making financial decisions?

RQ2 compares objective knowledge with perceived financial capability.

RQ3: Do students exposed to information about Artificial Intelligence in financial markets report higher trust in AI-assisted financial decision-making than students in the control condition?

RQ3 compares reported AI trust across the two conditions; because allocation used birth-month parity rather than computer-generated randomisation, causal interpretation is limited.

RQ4: Are students with higher financial literacy more likely to express positive attitudes towards sustainable investing?

RQ4 tests whether financial knowledge is associated with sustainable investment preferences.

RQ5: Do students who previously received financial education achieve higher financial literacy scores?

RQ5 examines whether respondents reporting previous financial education achieve higher literacy scores.

1.5 CONTRIBUTION OF THE THESIS

The thesis contributes by analysing financial literacy, AI trust, and sustainable investment preferences within the same student sample.

It also adds evidence from respondents connected to Danish higher education and uses an information-treatment design to explore AI trust alongside observational relationships involving literacy, confidence, education, and sustainability.

CHAPTER 2 — LITERATURE REVIEW

2.1 CONCEPT AND MEASUREMENT OF FINANCIAL LITERACY

Financial literacy has become a central concept in economic and behavioural research due to the increasing complexity of financial markets and the growing responsibility individuals have in managing their personal financial decisions. The ability to understand financial concepts and apply this knowledge effectively influences how individuals save, invest, borrow, and plan for the future.

Despite the extensive attention received in academic literature, financial literacy does not have a universally accepted definition. Huston (2010) highlights that financial literacy should be understood as a combination of financial knowledge and the ability to apply such knowledge in practical decision-making contexts. Therefore, financial literacy is not limited to knowing financial concepts, but also involves the capacity to use this information to achieve desired financial outcomes.

A similar perspective is provided by Atkinson and Messy (2012), who developed the OECD framework for measuring financial literacy. According to their approach, financial literacy consists of three main dimensions: financial knowledge, financial behaviour, and financial attitudes. Financial knowledge refers to the understanding of fundamental concepts such as interest rates, inflation, and risk diversification, financial behaviour concerns the practical application of financial knowledge, while financial attitudes capture individuals' preferences and approaches towards financial management.

One of the most influential contributions to this field is provided by Lusardi and Mitchell (2014), who conceptualise financial literacy as a form of human capital. According to their framework, individuals with higher financial literacy are better equipped to process financial information, evaluate economic alternatives, and make informed decisions. Their review of empirical evidence demonstrates that financial literacy plays an important role in explaining differences in financial behaviour across individuals.

The measurement of financial literacy has also received considerable attention. Many studies rely on objective measures based on individuals' ability to answer questions related to basic financial concepts. Lusardi and Mitchell (2014) introduced the well-known "Big Three" financial literacy questions, focusing

on interest rates, inflation, and risk diversification. These measures have become widely used in empirical research due to their ability to capture fundamental financial knowledge.

In this thesis, financial literacy is measured through an objective score based on respondents' answers to financial knowledge questions. This approach is consistent with previous literature and allows the analysis of whether differences in financial knowledge are associated with differences in financial attitudes and behaviours.

2.2 FINANCIAL LITERACY AND FINANCIAL DECISION-MAKING

A significant body of literature has investigated the relationship between financial literacy and financial decision-making. The general conclusion emerging from previous research is that individuals with higher financial knowledge tend to make more effective financial choices.

Van Rooij, Lusardi, and Alessie (2011) provide important evidence on this relationship by analysing the connection between financial literacy and stock market participation. Their results show that individuals with higher financial literacy are more likely to participate in financial markets, suggesting that financial knowledge reduces barriers to investment decisions. Individuals who understand financial concepts such as risk diversification and returns are more likely to feel capable of engaging with financial products.

The relationship between knowledge and decision-making can also be interpreted through the concept of financial confidence. Objective financial knowledge and subjective confidence represent two related but distinct dimensions. Individuals may possess financial knowledge but lack confidence in applying it, while others may feel confident despite having limited knowledge.

This distinction is particularly relevant among young adults. University students are often beginning to manage their own financial resources and make independent economic decisions. However, they may have limited previous exposure to financial education, potentially affecting both their knowledge and their confidence.

Based on this literature, the first hypothesis of this thesis is developed:

H1: Students with higher financial literacy report higher confidence in financial decision-making.

This hypothesis examines whether objective financial knowledge translates into greater perceived ability when making financial decisions.

2.3 ARTIFICIAL INTELLIGENCE IN FINANCIAL MARKETS

Technological innovation has significantly transformed financial markets, introducing new tools capable of supporting individuals in investment decisions. Among these innovations, Artificial Intelligence has become increasingly relevant due to its ability to process large amounts of data, identify complex patterns, and provide automated recommendations.

However, technological capability alone does not guarantee adoption. Individuals must also perceive AI systems as reliable and trustworthy. In financial contexts, where decisions involve uncertainty and potential economic losses, trust becomes a fundamental factor influencing willingness to rely on automated systems.

2.4 TRUST AND ACCEPTANCE OF ARTIFICIAL INTELLIGENCE

Trust represents one of the most important factors affecting the adoption of AI-based technologies. Unlike traditional financial advice provided by human professionals, AI systems require individuals to place confidence in algorithms and automated processes.

Glikson and Woolley (2020) provide a comprehensive review of human trust in artificial intelligence and identify several factors influencing AI acceptance, including perceived competence, transparency, reliability, and familiarity with the technology.

A relevant challenge is that individuals may perceive algorithmic systems as less understandable compared to human decision-makers. Castelo, Bos and Lehmann (2019) analyse how individuals evaluate decisions made by algorithms compared to humans and show that acceptance depends on the characteristics of the task and the perceived role of technology.

Based on this theoretical framework, this thesis investigates whether providing information about AI applications in financial markets can influence trust towards AI-assisted financial decision-making.

The second hypothesis is therefore:

H2: Students receiving the AI treatment report higher trust in AI-assisted financial decision-making compared to students in the control group.

2.5 FINANCIAL LITERACY AND SUSTAINABLE INVESTMENT PREFERENCES

In recent years, sustainable investing has become an increasingly important topic within financial markets. Sustainable investments incorporate environmental, social, and governance (ESG) considerations alongside traditional financial objectives, allowing investors to consider both economic returns and broader societal impacts.

The increasing popularity of ESG investments has created new challenges for individual investors, who must evaluate increasingly complex financial products and distinguish between different levels of sustainability. In this context, financial literacy may represent an important factor influencing sustainable investment decisions.

Financially literate individuals may possess greater ability to understand investment products, evaluate risks, and interpret financial information. As a result, they may be more capable of assessing sustainable investment opportunities and understanding the implications of their choices.

Gutsche and Ziegler (2019) investigate which characteristics influence individuals' willingness to invest in sustainable financial products. Their findings indicate that individual characteristics, financial considerations, and personal preferences all contribute to sustainable investment behaviour.

Similarly, Riedl and Smeets (2017) examine the motivations behind sustainable investment decisions and demonstrate that investors consider both financial and non-financial factors when choosing sustainable products. Their research highlights the importance of personal values, social preferences, and financial considerations.

Although sustainable investment behaviour is influenced by several factors, financial literacy may facilitate the evaluation of sustainable financial products. Individuals with greater financial knowledge may be better able to identify investment opportunities aligned with both financial and sustainability objectives.

Therefore, the third hypothesis of this thesis is:

H3: Financial literacy is positively associated with sustainable investment preferences.

2.6 FINANCIAL LITERACY AND FINANCIAL EDUCATION AMONG UNIVERSITY STUDENTS

University students represent an important population for studying financial literacy because they are often experiencing a transition towards financial independence. During this period, individuals begin to make decisions regarding budgeting, saving, borrowing, and investing, often without extensive previous financial education.

Previous studies indicate that young adults frequently display insufficient levels of financial literacy. Lusardi and Mitchell (2014) highlight that financial knowledge tends to be particularly limited among younger individuals, women, and those with lower levels of formal education.

Financial education represents one potential mechanism for improving financial literacy. Potrich, Vieira, and Kirch (2015) analyse the determinants of financial literacy and demonstrate that demographic characteristics and educational experiences significantly influence individuals' financial knowledge. Their results suggest that previous exposure to financial concepts contributes to higher levels of financial capability.

The relationship between financial education and financial literacy is particularly relevant for university students because educational interventions during early adulthood may influence future financial behaviour. Students who have previously attended financial education courses or received financial guidance may develop stronger knowledge of financial concepts.

Therefore, this thesis examines whether previous financial education is associated with higher financial literacy scores.

The fourth hypothesis is:

H4: Previous financial education is positively associated with financial literacy scores.

2.7 CONCEPTUAL FRAMEWORK AND RESEARCH HYPOTHESES

Based on the literature reviewed above, the conceptual framework follows the same sequence as the empirical hypotheses.

First, financial literacy is examined in relation to financial confidence (H1). Students with stronger objective knowledge may feel more capable of evaluating financial information and making financial decisions.

Second, the study considers whether exposure to information about Artificial Intelligence in financial markets is associated with higher reported trust in AI-assisted financial decision-making (H2).

Third, financial literacy is examined in relation to sustainable investment preferences (H3), testing whether stronger financial knowledge is associated with greater interest in sustainability-oriented investment choices.

Fourth, previous financial education is examined in relation to financial literacy (H4). This relationship is treated as an association because previous educational exposure was not experimentally assigned.

The conceptual framework of this thesis can be summarised as follows:

Financial literacy is expected to be positively associated with financial confidence (H1) and sustainable investment preferences (H3), while previous financial education is expected to be positively associated with financial literacy (H4).

The AI information treatment is tested separately as a predictor of AI Trust (H2).

Based on this conceptual framework and the existing literature, the following hypotheses are formulated:

H1: Students with higher financial literacy report higher confidence in financial decision-making.

This hypothesis examines whether objective financial knowledge is positively associated with subjective financial confidence.

H2: Students receiving the AI treatment report higher trust in AI-assisted financial decision-making compared to students in the control group.

This hypothesis investigates whether exposure to information about Artificial Intelligence applications in financial markets influences individuals' willingness to rely on AI-based financial advice.

H3: Financial literacy is positively associated with sustainable investment preferences.

This hypothesis analyses whether students with higher financial knowledge demonstrate stronger preferences towards sustainable investment products.

H4: Previous financial education is positively associated with financial literacy scores.

This hypothesis evaluates whether respondents reporting previous financial education also display higher levels of objective financial knowledge.

2.8 RESEARCH GAP AND CONTRIBUTION

The existing literature has extensively examined financial literacy and its consequences for individual financial behaviour. Previous studies have demonstrated that financial knowledge influences investment participation, financial decision-making, and economic well-being.

Similarly, research has investigated sustainable investment behaviour and the factors influencing individuals' willingness to consider ESG-related financial products. Recent literature has also explored the adoption of Artificial Intelligence and the importance of trust in automated decision-making systems.

However, these research areas have generally been analysed separately. Less attention has been dedicated to understanding how financial literacy interacts with emerging financial technologies and sustainable investment preferences, particularly among university students.

This thesis aims to contribute to filling this gap by combining these dimensions within a single empirical framework. Specifically, the study examines whether financial literacy influences financial confidence and sustainable investment preferences, while also analysing whether information exposure affects trust towards AI-assisted financial decision-making.

By focusing on Danish university students and incorporating an experimental information treatment, this research provides insights into how knowledge and information shape financial attitudes in an increasingly digitalised financial environment.

CHAPTER 3 — METHODOLOGY

3.1 RESEARCH DESIGN

This study adopts a quantitative research design based on primary data collected through an online survey. The objective of the research is to analyse the relationship between financial literacy, financial confidence, trust towards Artificial Intelligence (AI), and sustainable investment preferences among university students.

The research combines a survey-based observational approach with an experimental information treatment. The observational component aims to examine whether differences in financial literacy are associated with differences in financial confidence and sustainable investment preferences. The experimental component investigates whether providing respondents with information regarding the use of Artificial Intelligence in financial markets influences their trust towards AI-assisted financial decision-making.

The use of a quantitative methodology allows the collection of standardised information from a relatively large number of respondents and enables the application of statistical techniques to identify relationships between the main variables.

The research is based on an online questionnaire developed through Microsoft Forms. This approach was selected due to the geographical characteristics of the study, as the target population consists of university students in Denmark, making online data collection the most efficient method for reaching potential respondents.

3.2 SURVEY DESIGN AND QUESTIONNAIRE STRUCTURE

The questionnaire was designed specifically for the objectives of this research and is structured into different sections aimed at measuring the main theoretical constructs analysed in the study.

The first section collects general information about respondents, including demographic characteristics and educational background. The variables collected in this section include age, gender, academic situation, and previous exposure to financial education.

These variables are included because previous literature has shown that demographic characteristics and educational experiences may influence financial literacy levels and financial behaviour.

The second section measures respondents' financial literacy through objective financial knowledge questions. The questions focus on fundamental financial concepts and are designed to evaluate respondents' understanding of basic financial principles.

The answers provided by participants are used to construct the Financial Literacy Score, calculated as the total number of correct answers. This measure provides an objective indicator of respondents' financial knowledge.

The third section investigates financial confidence. Unlike financial literacy, which measures objective knowledge, financial confidence captures respondents' subjective perception of their ability to understand financial information and make financial decisions.

The fourth section focuses on Artificial Intelligence and financial markets. Before answering the AI-related questions, respondents are exposed to different information conditions depending on their assigned treatment group. This information-treatment component allows the analysis of whether information exposure influences trust towards AI-assisted financial decisions.

The final section examines sustainable investment preferences. Respondents are asked about the importance they assign to sustainability-related factors when considering investment decisions. These responses are used to construct the Sustainability Preference Index.

3.3 EXPERIMENTAL TREATMENT DESIGN

A key element of the research design is the inclusion of an experimental information treatment aimed at analysing whether information about Artificial Intelligence influences individuals' trust towards AI-assisted financial decision-making.

Before answering the AI-related questions, participants are assigned to one of two experimental conditions according to the parity of their birth month.

Participants born in:

- January
- March

- May
- July
- September
- November

receive an informational text describing the use of Artificial Intelligence in financial markets. This group represents the treatment group.

Participants born in:

- February
- April
- June
- August
- October
- December

do not receive any AI-related information before answering the questionnaire. This group represents the control group.

The informational text provided to the treatment group explains examples of AI applications in financial markets, including automated investment advice, portfolio optimisation, and the ability of algorithms to analyse large amounts of financial information.

The objective of this treatment is to evaluate whether increased awareness and understanding of AI applications affect respondents' willingness to trust AI-assisted financial decisions.

Although the assignment mechanism is based on birth month rather than computer-generated randomisation, the use of an external characteristic unrelated to financial attitudes provides a practical method to divide respondents into two groups with different information exposure.

3.4 TARGET POPULATION AND SAMPLING STRATEGY

The target population of this research consists of university students enrolled in Danish higher education institutions, students who are about to begin university studies, and individuals who have recently completed their studies.

The choice of Danish students represents an interesting research context due to Denmark's advanced financial environment and high level of digitalisation. Danish students are likely to have significant exposure to digital financial services, making them a relevant population for analysing attitudes towards emerging financial technologies such as AI.

At the same time, university students represent an important group for studying financial literacy because they are often approaching financial independence and beginning to make autonomous economic decisions.

The study initially aimed to collect approximately 100–120 valid responses. Given the relatively homogeneous characteristics of the target population, particularly regarding age and educational background, this sample size is considered appropriate for identifying general patterns and relationships between the main variables.

Although the sample is not intended to be fully representative of the entire Danish student population, it provides sufficient observations to perform descriptive statistics, correlation analysis, and regression models while maintaining feasibility within the time constraints of the research project.

3.5 DATA COLLECTION PROCESS

After the completion of the initial survey design, a pilot test was conducted before launching the final version of the questionnaire.

Following the pilot phase, the survey was officially launched and the main data collection process was completed through Microsoft Forms.

The sampling strategy combines convenience sampling and "snowball sampling" techniques. Initial participants were reached through personal academic contacts, student networks, and individuals connected to Danish university environments. Respondents were also encouraged to share the questionnaire with other students in order to increase participation and expand the sample. This approach was selected due to the practical challenges associated with collecting data from an international student population.

The data collection process took around 40 days, and therefore achieved the planned target of approximately 100–120 valid observations. The final sample of 101 complete responses was used for all descriptive statistics, correlation analyses, group comparisons, and regression models reported in Chapter 4.

Before the statistical analysis, incomplete responses were removed and the remaining observations were checked for consistency. The final analytical dataset contains only complete post-pilot responses.

3.6 PILOT TEST AND QUESTIONNAIRE REFINEMENT

Before launching the final version of the survey, a pilot test was conducted with approximately 15–20 participants.

The purpose of the pilot phase was to evaluate the clarity of the questions, identify potential sources of confusion, and improve the overall reliability of the questionnaire.

Based on participants' feedback, minor modifications were introduced. Some questions were slightly reformulated to improve comprehension and reduce possible ambiguity. In particular, adjustments were made to some financial literacy questions because participants reported that certain formulations required additional interpretation.

Minor improvements were also made to the instructions and wording of specific questions to ensure that respondents with different levels of financial knowledge and investment experience could complete the survey more easily.

No changes were made to the main theoretical framework, research objectives, hypotheses, variables, or planned statistical methodology. The modifications were exclusively aimed at improving the quality of measurement and respondents' understanding of the questionnaire.

3.7 VARIABLES AND MEASUREMENT

The main variables included in the analysis are divided into independent variables, dependent variables, and control variables.

The independent variables are:

-Financial Literacy Score;

-AI Treatment;

-Previous Financial Education.

The dependent variables are:

-AI Trust Index;

-*Financial Confidence Index;*

-Sustainability Preference Index.

The control variables include:

-*Age;*

-*Gender.*

The variables are defined as follows:

Variable	Type	Scale
Financial literacy score	continuous	0–3
AI treatment	binary	0/1 (control/treatment)
AI trust	continuous	0–10
Financial confidence index	continuous	1–5
Sustainability preference index	continuous	1–5
Age	categorical	age groups
Gender	categorical	man/woman/prefer not to say
Previous financial education	binary	0/1 (no/yes)

The financial literacy score is calculated by counting the number of correct answers to the three objective financial knowledge questions included in the final questionnaire, producing a score ranging from 0 to 3. The financial confidence index is calculated as the mean of three 1–5 items, and measures confidence in personal financial decisions, investment-risk evaluation, and understanding of the risk–return relationship. AI trust is measured directly through a 0–10 question, asking respondents how much they trust AI when making financial decisions. The sustainability preference index is calculated as the mean of three 1–5 items about sustainable investments. AI treatment equals 1 for respondents born in January, March, May, July, September, or November and 0 otherwise. Previous financial education equals 1 for respondents reporting financial education at school/university or through courses or personal learning, and 0 for respondents reporting no previous financial education.

3.8 HYPOTHESES

RQ1 is addressed through summary statistics. RQ2–RQ5 correspond to the four testable hypotheses below, respectively H1, H2, H3, and H4.

Based on the theoretical framework and previous literature, the study develops four main hypotheses.

H1: Students with higher financial literacy report higher confidence in financial decision-making;

this hypothesis investigates whether objective financial knowledge is positively associated with subjective confidence.

H2: Students receiving the AI treatment report higher trust in AI-assisted financial decision-making compared to students in the control group;

this hypothesis evaluates whether exposure to information about AI applications in financial markets influences trust towards AI-based financial advice.

H3: Financial literacy is positively associated with sustainable investment preferences;

this hypothesis examines whether financially knowledgeable students demonstrate stronger preferences towards sustainable investment products.

H4: Previous financial education is positively associated with financial literacy scores;

this hypothesis analyses whether previous exposure to financial education contributes to higher levels of financial knowledge.

3.9 STATISTICAL ANALYSIS

After data collection was completed, the dataset was exported from Microsoft Forms and analysed using R.

The first stage of the analysis consisted of data preparation and cleaning. The pilot observations were removed, incomplete responses were excluded, categorical variables were coded, and the composite measures used in the study were constructed.

The second stage involved descriptive statistics to provide an overview of the sample characteristics and the distribution of the main variables. Means, standard deviations, frequencies, and percentages were calculated.

The third stage included correlation analysis to investigate preliminary relationships between financial literacy, financial confidence, AI trust, and sustainable investment preferences.

Finally, linear regression models were estimated to test the four hypotheses developed in the research framework. Heteroskedasticity-robust (HC1) standard errors were used when evaluating the regression coefficients.

Linear regression models were used to examine whether financial literacy predicts financial confidence and sustainable investment preferences. The effect of the AI information treatment was first assessed by comparing mean AI trust between treatment and control groups and was then estimated through a regression with the treatment indicator as the explanatory variable. The association between previous financial education and financial literacy was assessed through a group comparison and regression model.

The primary hypothesis tests reported in Chapter 4 focus on the relationships specified in the conceptual framework. Age and gender are reported as sample characteristics and remain available for additional robustness specifications where appropriate.

3.10 ETHICAL CONSIDERATIONS

Participation in this study is voluntary, and respondents are informed that their answers will be used exclusively for academic research purposes.

The empirical analysis was conducted on survey responses in aggregated form. Administrative fields generated by the survey platform were not used as analytical variables, and no individual respondent is identified in the results reported in this thesis.

The research follows GDPR principles, by ensuring transparency regarding data collection, limiting the use of information to the stated research objectives, and protecting participants' privacy throughout the research process.

CHAPTER 4 — EMPIRICAL RESULTS

4.1 DATA PREPARATION AND FINAL SAMPLE

The empirical analysis is based on the final version of the survey dataset exported from Microsoft Forms. The raw file contained 133 recorded responses. The first 19 observations belonged to the pilot phase and were excluded before the main analysis. This left 114 post-pilot observations. A completeness check was then performed on the substantive survey questions. Thirteen observations contained one or more missing substantive responses and were removed. The final analytical sample therefore consists of 101 complete observations.

All variables used in the analysis were constructed according to the final questionnaire. The financial literacy score ranges from 0 to 3 and equals the number of correct answers to the three objective financial knowledge questions. Financial confidence and sustainability preference are composite measures obtained by averaging their respective 1–5 items. AI trust is measured directly on a 0–10 scale. The AI treatment indicator identifies respondents assigned to the informational condition through birth-month parity, while previous financial education distinguishes respondents with and without prior exposure to financial education.

4.2 SAMPLE CHARACTERISTICS

The final sample is predominantly composed of young respondents. 86 of the 101 participants fall within the 18–25 age category. In terms of gender, 62 respondents identify as men, 38 as women, and one respondent selected “Prefer not to say”. Previous financial education is relatively common in the sample: 74 respondents report having received financial education either at school or university or through courses and personal learning, while 27 report no previous financial education. The experimental allocation is also well balanced, with 51 respondents in the treatment group and 50 in the control group.

Characteristic	Category	N
Gender	Man	62
Gender	Woman	38
Gender	Prefer not to say	1
Age	18–25	86
Previous financial education	Yes	74
Previous financial education	No	27
AI information condition	Treatment	51

AI information condition	Control	50

4.3 DESCRIPTIVE STATISTICS

Table 4.2 reports descriptive statistics for the main analytical variables. The average financial literacy score is 2.58 out of 3 (SD = 0.64), indicating a generally high level of objective financial knowledge in the sample. The mean financial confidence index is 3.38 out of 5 (SD = 0.87). The average AI trust score is 4.71 out of 10 (SD = 2.38), suggesting moderate trust in the use of AI for financial decisions. Sustainable investment preferences are comparatively high, with a mean sustainability preference Index of 4.08 out of 5 (SD = 0.72).

Variable	N	Mean	SD	Min	Max
Financial Literacy Score	101	2.58	0.64	0	3
Financial Confidence Index	101	3.38	0.87	1.33	5
AI Trust	101	4.71	2.38	0	10
Sustainability Preference Index	101	4.08	0.72	2.33	5

The distribution of the financial literacy score is concentrated at the upper end of the scale. One respondent obtained 0 correct answers, five obtained 1, 29 obtained 2, and 66 respondents obtained the maximum score of 3. Thus, 65.3% of the final sample answered all three financial literacy questions correctly.

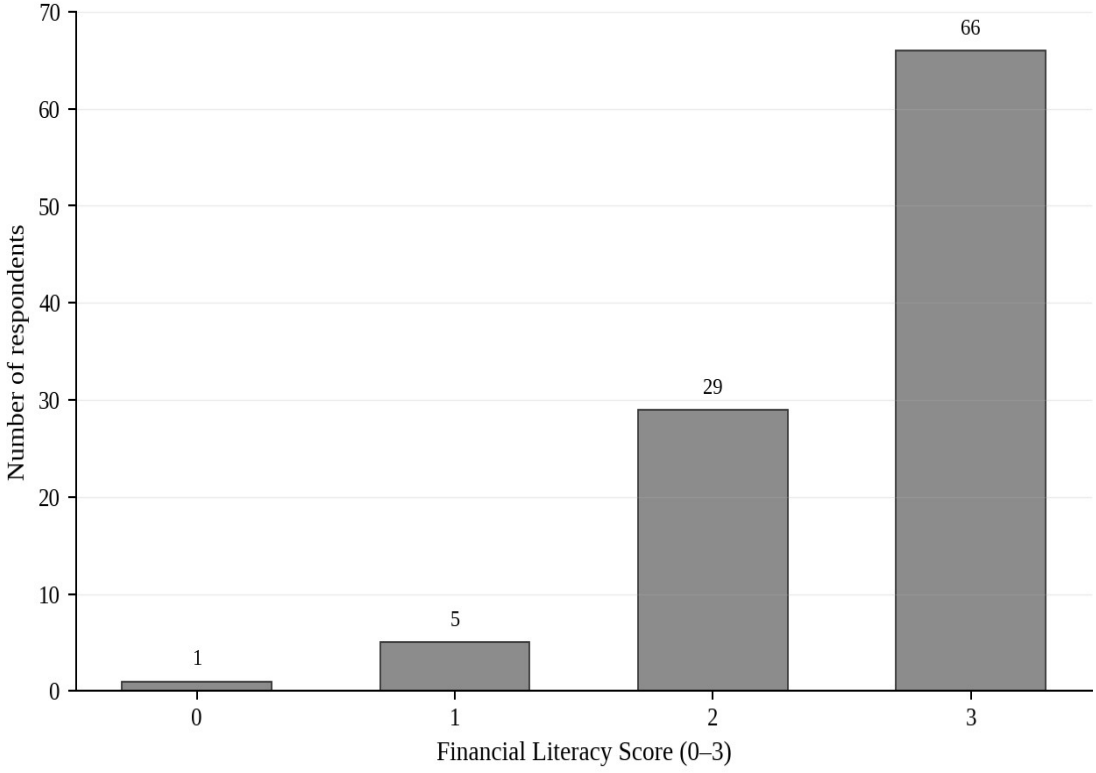


Figure 4.1. Distribution of the Financial Literacy Score. Source: Author's elaboration, final survey data (N = 101).

4.4 PRELIMINARY CORRELATION ANALYSIS

Before estimating the regression models, bivariate correlations were examined for the relationships involving continuous variables. Financial literacy is positively correlated with financial confidence (r = 0.197, p = 0.049), although the magnitude of the relationship is small. The correlation between financial literacy and sustainable investment preferences is also positive but weaker and not statistically significant (r = 0.098, p = 0.329). These correlations provide a preliminary indication of the direction of H1 and H3, while the regression models below provide the main hypothesis tests using robust standard errors.

4.5 H1 — FINANCIAL LITERACY AND FINANCIAL CONFIDENCE

H1 predicts that students with higher financial literacy report greater confidence in financial decision-making. The estimated regression coefficient for the financial literacy score is positive (β = 0.270), indicating that a one-point increase in the literacy score is associated with an average increase of approximately 0.27 points in the Financial Confidence Index. However, using HC1 robust standard errors, the coefficient does not reach the conventional 5% significance level (SE = 0.154, p = 0.080; 95% CI [−0.032, 0.572]). The model explains approximately 3.9% of the variation in financial confidence (R^2 = 0.039).

The direction of the association is consistent with H1, and the simple correlation is statistically significant at the 5% level, but the regression evidence is weaker after using robust standard errors. H1 is therefore interpreted as receiving positive but limited evidence rather than full statistical support.

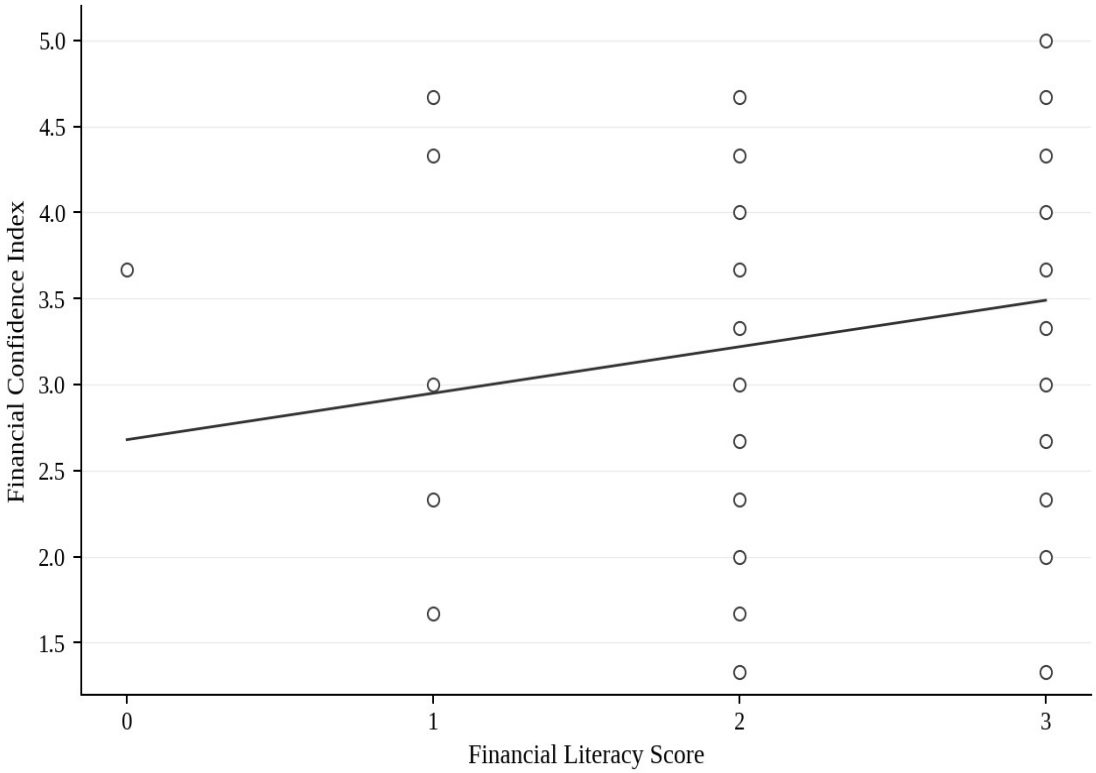


Figure 4.2. Financial literacy and financial confidence. Source: Author's elaboration, final survey data (N = 101).

4.6 H2 — AI INFORMATION TREATMENT AND AI TRUST

H2 predicts that respondents receiving information about AI applications in financial markets report higher trust in AI-assisted financial decision-making than respondents in the control group. The control group contains 50 respondents and has a mean AI Trust score of 4.30 (SD = 2.43). The treatment group contains 51 respondents and has a mean score of 5.12 (SD = 2.29). The raw difference between the two groups is therefore approximately 0.82 points on the 0–10 trust scale.

The regression estimate confirms the same positive difference ($\beta = 0.818$). With HC1 robust standard errors, the estimate has SE = 0.470 and p = 0.082, with a 95% confidence interval from −0.104 to 1.739. The model R^2 is 0.030. Consequently, the treatment effect is in the predicted direction but is not statistically significant at the conventional 5% level. The result can be interpreted as suggestive or marginal evidence of a positive information effect, but it does not provide strong statistical confirmation of H2.

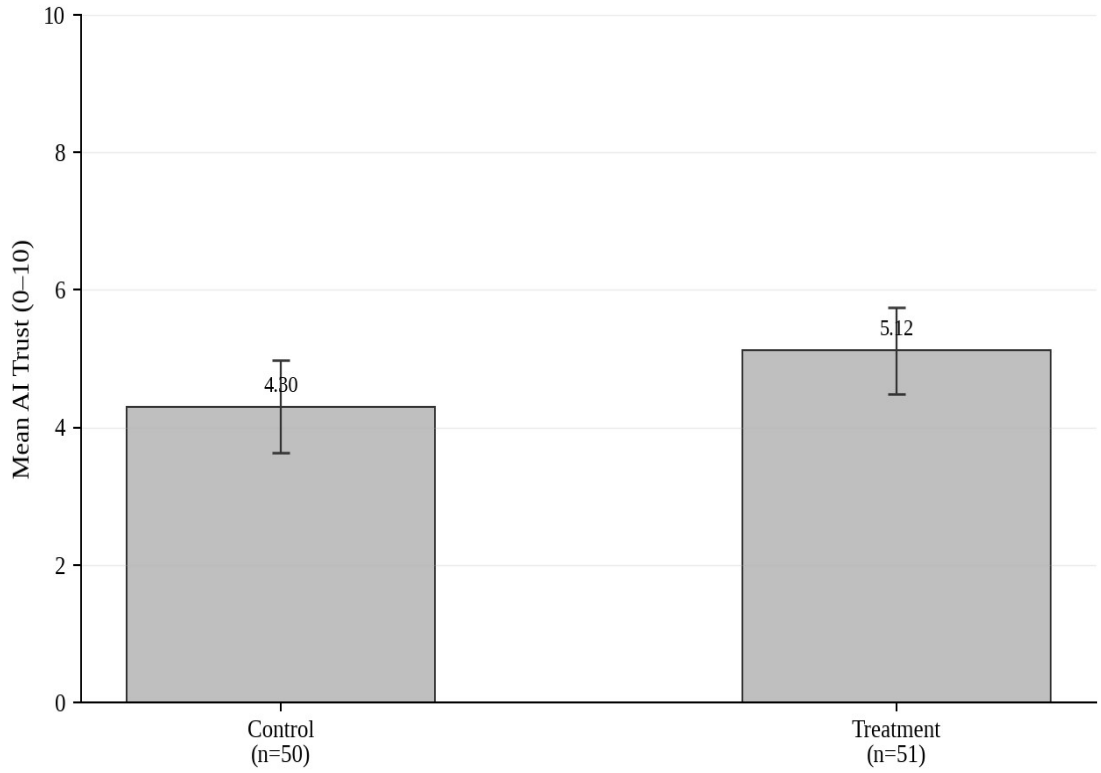


Figure 4.3. Mean AI Trust by experimental condition. Source: Author's elaboration, final survey data (N = 101).

4.7 H3 — FINANCIAL LITERACY AND SUSTAINABLE INVESTMENT PREFERENCES

H3 predicts a positive association between financial literacy and sustainable investment preferences. The estimated coefficient is positive but small ($\beta = 0.110$). The robust standard error is 0.119 and the coefficient is not statistically significant ($p = 0.353$; 95% CI [−0.123, 0.343]). The explanatory power of the model is also very limited ($R^2 = 0.010$).

These results do not provide evidence that students with higher objective financial literacy systematically express stronger sustainable investment preferences in this sample. H3 is therefore not supported.

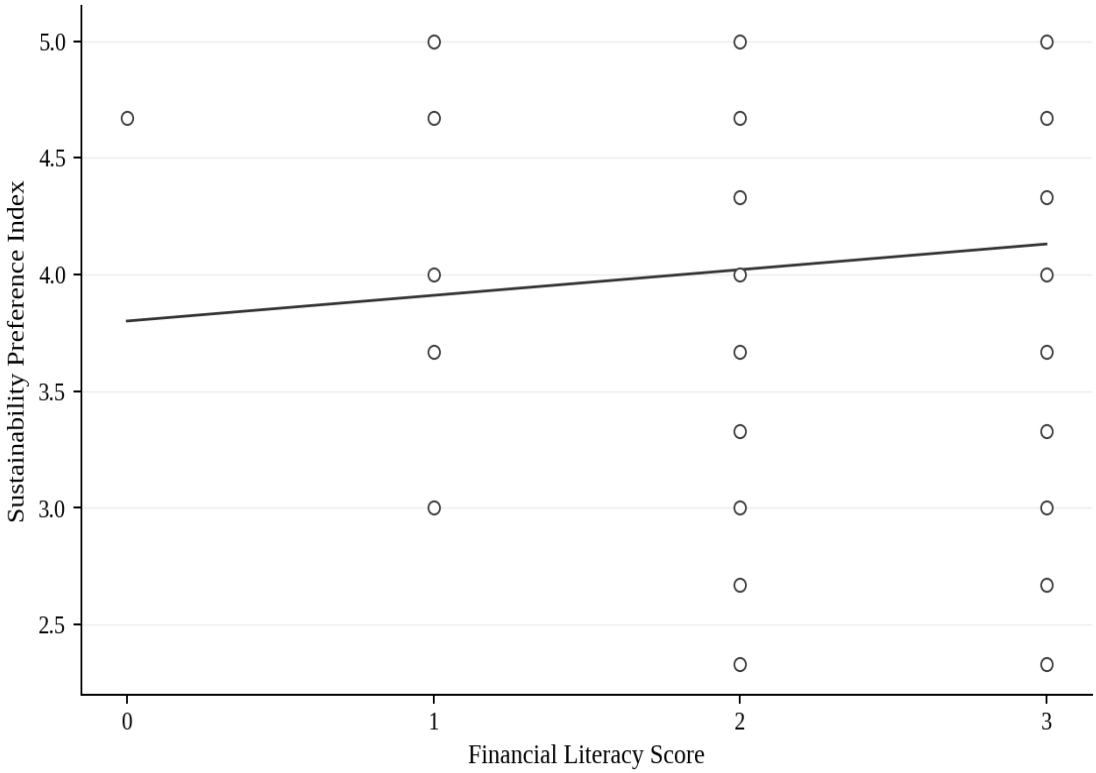


Figure 4.4. Financial literacy and sustainable investment preferences. Source: Author's elaboration, final survey data (N = 101).

4.8 H4 — PREVIOUS FINANCIAL EDUCATION AND FINANCIAL LITERACY

H4 predicts that respondents who previously received financial education achieve higher Financial Literacy Scores. Respondents without previous financial education (N = 27) have an average literacy score of 2.30 (SD = 0.61), while respondents with previous financial education (N = 74) have an average score of 2.69 (SD = 0.62). The difference is approximately 0.39 points on the 0–3 literacy scale.

The regression estimate is positive and statistically significant (β = 0.393, robust SE = 0.137, p = 0.004; 95% CI [0.125, 0.661]). The model explains approximately 7.5% of the variation in financial literacy (R^2 = 0.075). This provides clear evidence in favour of H4: previous exposure to financial education is associated with higher objective financial knowledge in the final sample.

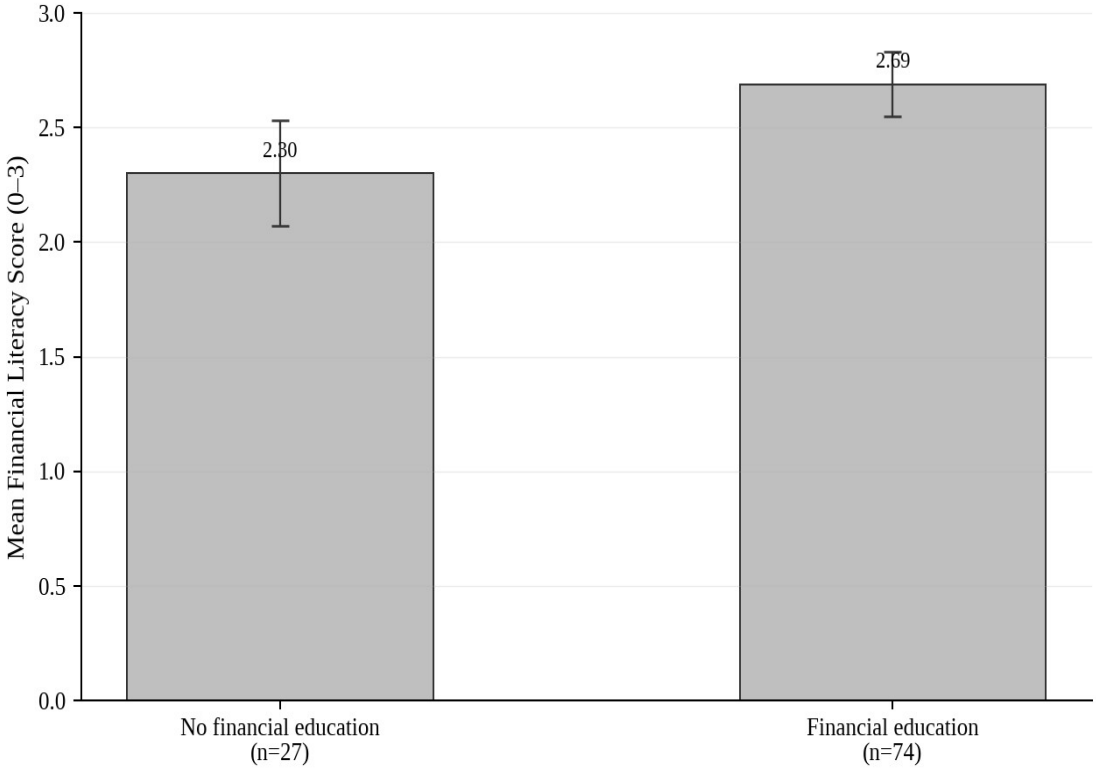


Figure 4.5. Mean Financial Literacy Score by previous financial education. Source: Author's elaboration, final survey data (N = 101).

4.9 SUMMARY OF HYPOTHESIS TESTING

Table 4.3 summarises the four hypothesis tests. The strongest evidence concerns H4, which is supported at the 1% significance level. H1 and H2 both produce positive coefficients in the expected direction, but their robust p-values are approximately 0.08 and therefore exceed the conventional 5% threshold. H3 produces only a small, statistically insignificant relationship and is not supported.

Hypothesis	Relationship	Coefficient	Robust p-value	Assessment
H1	Financial literacy → Financial confidence	+0.270	0.080	Positive, limited evidence
H2	AI treatment → AI trust	+0.818	0.082	Positive, limited evidence
H3	Financial literacy → Sustainability preference	+0.110	0.353	Not supported
H4	Previous financial education → Financial literacy	+0.393	0.004	Supported

H4 is supported by the analysis, whereas H1 and H2 provide only limited evidence and H3 is not supported. These results are discussed in Chapter 5.

CHAPTER 5 — DISCUSSION

-The empirical analysis produces mixed evidence across the four hypotheses. H1 and H2 show positive estimates but do not reach the conventional 5% significance threshold; H3 shows no meaningful association between financial literacy and sustainable investment preferences; H4 shows a statistically significant positive association between previous financial education and objective financial literacy.

This chapter interprets the empirical results in relation to the theoretical framework and the literature reviewed in Chapter 2. The analysis produced four main findings. First, financial literacy is positively related to financial confidence, but the evidence is relatively weak once robust standard errors are used. Second, respondents exposed to the AI information treatment report higher average trust in AI-assisted financial decision-making than respondents in the control group, although the estimated effect does not reach the conventional 5% significance level. Third, financial literacy is not significantly associated with sustainable investment preferences. Finally, previous financial education is positively and significantly associated with higher financial literacy scores.

Financial literacy is positively associated with financial confidence, but the robust estimate is not statistically significant at the 5% level. The result is therefore consistent with the expected direction without providing conclusive evidence for H1.

H1 predicted that students with higher financial literacy would report greater confidence in financial decision-making. The empirical results are broadly consistent with the expected direction. Financial literacy and financial confidence show a small positive bivariate correlation ($r = 0.197$, $p = 0.049$), while the regression coefficient is also positive ($\beta = 0.270$). However, with HC1 robust standard errors, the regression p-value is 0.080, meaning that the relationship does not meet the conventional 5% threshold for statistical significance.

This result is consistent with the distinction developed in the literature review between objective financial knowledge and subjective financial confidence. Previous research discussed in Chapter 2 indicates that financially knowledgeable individuals are generally better able to evaluate financial alternatives and engage with financial products. The positive coefficient found in this study follows that theoretical

expectation: respondents who answer more financial literacy questions correctly also tend to feel more capable of making financial decisions.

Students in the AI information condition report higher average trust than those in the control condition, but the difference is not statistically significant at the 5% level. The result should also be interpreted cautiously because allocation was based on birth-month parity rather than full randomisation.

H2 examined whether exposure to information about Artificial Intelligence applications in financial markets increases trust in AI-assisted financial decision-making. The treatment group reported an average AI Trust score of 5.12 compared with 4.30 in the control group, corresponding to an estimated difference of approximately 0.82 points on the 0–10 scale. The direction of the effect is therefore consistent with the hypothesis. Nevertheless, the robust p-value of 0.082 indicates that the result is not statistically significant at the 5% level.

The result is relevant in light of the literature on trust and technology acceptance reviewed in Chapter 2. Glikson and Woolley (2020) emphasise the importance of perceived competence, transparency, reliability, and familiarity in shaping trust in AI, while Castelo, Bos, and Lehmann (2019) show that willingness to rely on algorithms depends on how individuals perceive the task and the role of technology. The positive difference observed between the treatment and control groups is compatible with the idea that additional information can reduce uncertainty and make AI-based financial tools appear more understandable or useful.

*The analysis does not support H3: higher financial literacy is not associated with systematically stronger sustainable investment preferences. This suggests that sustainability attitudes may depend more on environmental values, social preferences, or other non-financial motivations than on basic financial knowledge alone***.**

H3 predicted that financial literacy would be positively associated with sustainable investment preferences. Although the estimated coefficient is positive ($\beta = 0.110$), the relationship is small and statistically insignificant ($p = 0.353$). The data therefore do not provide evidence that respondents with higher objective financial knowledge systematically express stronger preferences for sustainable investments.

This finding is important because the theoretical argument developed in Chapter 2 suggested that greater financial knowledge could help individuals understand complex investment products and evaluate the financial implications of sustainable choices. The empirical results indicate that this mechanism is not sufficient to explain sustainability preferences in the present sample. This is consistent with the broader literature discussed in the thesis, particularly Riedl and Smeets and Gutsche and Ziegler, which highlights that sustainable investment decisions are influenced not only by financial considerations but also by personal values, social preferences, and individual characteristics.

H4 receives the strongest statistical support. Respondents reporting previous financial education score 2.69 out of 3 on average, compared with 2.30 among those without it; the estimated difference is about 0.39 points (β = 0.393, p = 0.004). Because education was not experimentally assigned, this is an association rather than a causal effect.

H4 receives the strongest statistical support among the tested hypotheses. Respondents who report previous financial education obtain an average Financial Literacy Score of 2.69 out of 3, compared with 2.30 among respondents without previous financial education. The estimated association of approximately 0.39 points is statistically significant (β = 0.393, p = 0.004), and the confidence interval remains entirely positive. Because previous financial education was not experimentally assigned, this result should be interpreted as an association rather than a causal effect of education.

This finding is consistent with the literature reviewed in Chapter 2. Financial literacy has been conceptualised as a form of human capital that can be developed through learning and experience, while previous studies such as Potrich, Vieira, and Kirch indicate that educational exposure is associated with stronger financial knowledge. The present results provide additional evidence in the same direction among the respondents included in this study.

The results show that objective financial knowledge does not translate uniformly into confidence, AI trust, or sustainable preferences. The clearest relationship is between previous financial education and literacy, while the other estimates are weaker or statistically inconclusive.

For H1, the positive coefficient suggests a possible relationship between literacy and confidence. For H2, the treatment group reports higher AI trust, but uncertainty and the assignment procedure prevent a strong causal conclusion. H3 indicates that sustainable preferences are not explained by basic financial literacy in this sample.

H4 identifies previous financial education as a relevant correlate of objective financial knowledge, while remaining observational rather than causal.

5.7 LIMITATIONS OF THE STUDY

The findings should be considered in light of several limitations. First, the final analytical sample consists of 101 complete observations. This sample is adequate for the descriptive and regression analyses conducted in the thesis, but it limits statistical power, particularly for relatively small effects. This is especially relevant for H1 and H2, where the estimated coefficients are positive but the robust p-values remain close to, rather than below, the conventional 5% threshold.

Second, the sampling strategy combines convenience and snowball sampling. As a result, the sample is not statistically representative of the entire Danish university student population. Respondents reached through academic and personal networks may differ systematically from students who did not participate, for example in their interest in finance, investment experience, or familiarity with digital technologies.

Third, the Financial Literacy Score is based on three objective questions. These questions capture important basic concepts, but they cannot represent the full range of financial knowledge relevant to real-world financial decision-making. The high concentration of respondents obtaining the maximum score also suggests a possible ceiling effect, which reduces variation in the literacy measure and may make relationships with other variables more difficult to detect.

Fourth, several outcomes are self-reported. Financial confidence, AI trust, and sustainable investment preferences measure respondents' stated perceptions and attitudes rather than observed financial behaviour.

A respondent who reports strong sustainable preferences, for example, may not necessarily select sustainable products when making an actual investment.

Fifth, the AI treatment assignment is based on birth-month parity rather than computer-generated randomisation. This mechanism provides a practical way to create two information conditions, but it is not equivalent to a fully randomised experimental procedure. The treatment is also brief and the outcome is measured immediately, so the study cannot determine whether any change in AI trust would persist over time.

5.8 DIRECTIONS FOR FUTURE RESEARCH

Future research should use larger and more representative multi-university samples, broader financial-literacy measures, and fully randomised AI information treatments with follow-up measurements.

For sustainable investing, future studies could also measure environmental values, ESG knowledge, social preferences, and actual investment choices to distinguish financial knowledge from non-financial motivations.

CHAPTER 6 — CONCLUSION

6.1 CONCLUSION

This thesis examined financial literacy, financial confidence, trust in Artificial Intelligence, sustainable investment preferences, and previous financial education among university students connected to the Danish higher education context. The study combined an online survey with an AI information treatment.

After excluding 19 pilot observations and incomplete questionnaires, the final analytical sample contained 101 complete responses. Financial literacy was measured with three objective questions; confidence and sustainability were measured through composite indexes; AI trust used a 0–10 scale. The analysis combined descriptive statistics, correlations, group comparisons, and linear regressions with HC1 robust standard errors.

Respondents showed high basic financial literacy (mean 2.58/3; about 65% answered all three questions correctly). Literacy was positively associated with confidence but not significantly at the 5% level. The AI information group reported higher average trust, although the difference was also not significant at 5%. Financial literacy was not meaningfully associated with sustainable investment preferences. By contrast, previous financial education was positively and significantly associated with literacy ($\beta = 0.393$, $p = 0.004$).

In this sample, objective financial knowledge alone does not explain financial confidence, AI trust, or sustainable preferences. These attitudes likely also reflect experience, values, familiarity with technology, and other individual characteristics.

The clearest empirical relationship concerns previous financial education, which is associated with higher objective knowledge. Because educational exposure was self-reported, the result does not establish causality.

The thesis contributes an integrated student-level analysis of financial literacy, AI, and sustainable investing. Its conclusions remain exploratory because of the sample size, non-probability sampling, self-reported outcomes, and the limitations of the treatment assignment. Larger samples, richer measures, and stronger experimental designs would allow future research to test these relationships more precisely.

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APPENDIX A — OPERATIONALISATION OF THE MAIN VARIABLES

This appendix summarises the operational definitions used in the final empirical analysis. It reflects the final questionnaire and the data-cleaning procedure applied after completion of data collection.

Variable	Construction	Scale	Role
Financial Literacy Score	Number of correct answers across the three objective financial knowledge questions	0–3	Independent / outcome in H4
Financial Confidence Index	Mean of three items measuring confidence in financial decisions, investment risk evaluation, and understanding of risk–return relationships	1–5	Dependent in H1
AI Treatment	1 for January, March, May, July, September, or November; 0 for February, April, June, August, October, or December	0/1	Independent in H2
AI Trust	Respondent's reported trust in AI when making financial decisions	0–10	Dependent in H2
Sustainability Preference Index	Mean of three Likert items concerning sustainable investment returns, consideration by young investors, and willingness to accept slightly lower returns	1–5	Dependent in H3
Previous Financial Education	1 if previous financial education was received at school/university or through courses/personal learning; 0 otherwise	0/1	Independent in H4