AN EMPIRICAL EXPLORATION OF WOMEN'S FINANCIAL LITERACY AND EMPOWERMENT: A POLICYMAKING AND REGULATORY CONTEXT

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How to cite this paper: Alokley, S. A., Albarrak, M. S., & Ansari, Y. (2026). An empirical exploration of women's financial literacy and empowerment: A policymaking and regulatory context. *Journal of Governance and Regulation, 15*(2), 8–23. https://doi.org/10.22495/jgrv15i2art1

ISSN Print: 2220-9352
ISSN Online: 2306-6784

Received: 02.07.2025
Revised: 25.10.2025; 09.02.2026
Accepted: 18.02.2026

JEL Classification: G11, G51, G53
DOI: 10.22495/jgrv15i2art1

Abstract

Despite growing awareness of financial inclusion, many women continue to face challenges in managing personal finances effectively, making financial literacy essential for sound decision-making. As emphasized by Lusardi and Mitchell (2014), financial literacy plays a crucial role in shaping individuals' financial behavior and long-term economic well-being. This study investigates the impact of financial literacy among women in Saudi Arabia, a context that remains underexplored in existing literature. Using convenience sampling, data were collected and analyzed using statistical methods to test the proposed hypotheses. The results demonstrate that women's financial literacy is positively associated with their level of education, income, and financial understanding. Moreover, women in Saudi Arabia exhibit higher financial awareness than men, highlighting the need for targeted financial education initiatives. The findings also indicate that cultural and social factors play an important role in shaping women's financial behavior and decision-making. These findings align with the Organisation for Economic Co-operation and Development International Network on Financial Education (OECD/INFE) (2016) and the OECD/INFE (2023), International Survey of Adult Financial Literacy, which stresses the importance of developing comprehensive financial education strategies to enhance inclusion and empowerment. The study concludes that improving women's financial literacy is essential for promoting gender equality and supporting sustainable economic growth.

Keywords: Financial Literacy, Financial Knowledge, Women, Decision-Making, Saudi Arabia

Authors' individual contribution: Conceptualization — S.A.A. and M.S.A.; Methodology — M.S.A. and Y.A.; Software — Y.A.; Formal Analysis — Y.A.; Investigation — Y.A.; Data Curation — S.A.A. and M.S.A.; Writing — Original Draft — Y.A.; Writing — Review & Editing — S.A.A. and M.S.A.; Project Administration — M.S.A.

Declaration of conflicting interests: The Authors declare that there is no conflict of interest.

Acknowledgements: The Authors thank all the respondents who participated in the study and willingly extended all the help and support for the data collection.

1. INTRODUCTION

Financial literacy refers to acquiring knowledge that enables individuals to become informed and proficient in financial management (Kumari, 2020). It also contributes to a country's development and financial growth. With the rapid expansion of financial markets, individuals today must be increasingly capable of managing their finances effectively (Mahdzan & Tabiani, 2013). Developments in the financial sector have led to a broad range of financial goods and services, making financial decisions increasingly difficult. Evidence has revealed a significant association between financial literacy and household well-being. According to previous studies, households with lower financial awareness or literacy are less likely to prepare for retirement, have lower asset levels (Lusardi & Mitchell, 2007), and often acquire loans at relatively higher interest rates. These findings have prompted policymakers across wealthy and less-developed nations to enhance initiatives to advance financial education and promote family savings and involvement in financial markets, eventually improving well-being and decreasing poverty. Financial literacy is a fundamental skill for comprehending money and its use in everyday life (Kumari, 2020).

This study is grounded in the human capital theory, which posits that individuals' knowledge and skills are essential forms of capital that enhance productivity and economic well-being (Becker, 1975). In this context, financial literacy represents a key component of human capital, enabling individuals, particularly women, to make informed decisions that improve their financial security and participation in the economy. Additionally, the study draws upon empowerment theory, which links access to knowledge and resources with greater control over economic and social outcomes (Kabeer, 1999). These frameworks collectively guide the analysis of how financial literacy contributes to women's empowerment within Saudi Arabia's socioeconomic transformation.

Financial literacy has garnered the attention of researchers, policymakers, and financial organizations (Lusardi, 2019). This is because of the increasing importance of personal financial management skills. Some studies have explored this concept among undergraduate students in Sri Lanka who are transforming the economy's future (Kumari, 2020). Country-specific studies include case studies of university students in schools in Malaysia (Mahdzan & Tabiani, 2013), and Bogor city, Indonesia (Khoirunnisaa & Johan, 2020). In addition to youth and students, some researchers have explored whether financial literacy strongly predicts economic empowerment among women. More recently, Showkat et al. (2025) demonstrated that digital financial inclusion significantly amplifies the empowerment effects of financial literacy for women in emerging economies. Country-specific studies have also been conducted on the influence of literacy programs on the empowerment of women in Khulna city of Bangladesh (Islam et al., 2020), Sri Lanka (Kumari, 2020), and Madurai city of India (Duraichamy & Ponraj, 2021).

Other studies (Lusardi & Mitchell, 2014; Okamoto & Komamura, 2021) and recent empirical data from the Organisation for Economic Co-operation and Development International Network on Financial Education (OECD/INFE) (2023) and Kaur and Sawhney (2025) demonstrate that a significant and persistent disparity remains between genders. Due to women's distinct financial obstacles, they must develop financial literacy to establish a stable financial future. Women face specific challenges owing to relatively longer life expectancies, lower lifetime incomes, and work interruptions caused by childcare commitments. Given that women are more likely to be widowed during retirement, their savings requirements differ from those of men. According to Lusardi and Mitchell (2008), women are less engaged in retirement planning than men are, resulting in inadequate retirement preparation.

Furthermore, low financial awareness and resource access undermine women's post-retirement financial stability. Poor financial literacy has significant implications for other types of financial choices. For instance, during the COVID-19 pandemic, global economies were significantly affected by and endured financial instability. A strong association has been established between financial instability and optimism among women (Chhatwani & Mishra, 2021). Recent empirical evidence by Cziriak et al. (2024) confirms that gender disparities in financial literacy persist even in developed economies, independent of institutional and cultural differences.

Despite growing global recognition of this gender gap, limited research has examined how it manifests within Saudi Arabia's rapidly changing socioeconomic landscape. Research has shown that women tend to have lower financial literacy and confidence than men, which could put them at a disadvantage. Additionally, gender differences in financial literacy have been studied in countries such as the United States, Germany, and the Netherlands (Bucher-Koenen et al., 2017). This study indicates that gender disparities in financial literacy persist in all three countries, independent of socioeconomic conditions, cultural norms, and institutional considerations. The available literature presents strong evidence for this gender gap. The samples used in these studies were from a single nation or from other nations (Bucher-Koenen et al., 2017; Fonseca et al., 2012; Kadoya & Khan, 2020). Nevertheless, none of these studies have examined these aspects in Saudi Arabia.

Only one case study has been conducted in Saudi Arabia. However, this study did not consider the characteristics of a country (Hasler & Lusardi, 2017). By contrast, we intend to expand the current corpus of research on gender disparity in a new nation with unique characteristics. Saudi Arabia and the Middle East, known as leading oil exporters globally, also boast significant economies. In addition, Saudi Arabia is an emerging economy and a member of the G20. Saudi Arabia's ongoing Vision 2030 reforms aim to diversify its economy beyond oil, expand private sector participation, and promote gender equality in the workforce. These initiatives have significantly increased women's participation in education and employment, alongside government programs promoting financial inclusion. Despite these advances, empirical research on women's financial literacy in Saudi Arabia remains limited. A recent bibliometric analysis by Kaur and

Sawhney (2025) highlights that Middle Eastern nations remain underrepresented in financial literacy research, underscoring this study's contribution to filling that gap.

While financial literacy is acknowledged as an essential skill for empowering individuals, the elements affecting financial literacy among women in Saudi Arabia have not been thoroughly investigated. This study seeks to bridge this gap by focusing on the following goals:

1) to assess the current levels of financial literacy among women in Saudi Arabia;

2) to investigate the influence of demographic factors such as education and income on financial literacy;

3) to compare financial literacy levels between genders;

4) to propose targeted interventions to enhance women's financial literacy.

This study addresses the following research questions to meet these goals:

RQ1: How knowledgeable are women in Saudi Arabia about financial matters?

RQ2: How do education, income, and financial understanding influence women's financial literacy levels in Saudi Arabia?

RQ3: Are there significant gender differences in financial literacy in Saudi Arabia?

RQ4: What targeted interventions can be proposed to enhance financial literacy among Saudi Arabian women?

The study not only provides practical insights into improving women's financial literacy but also contributes theoretically by demonstrating how financial knowledge functions as a form of human capital that fosters empowerment and inclusion in emerging economies. By addressing these questions, this study contributes to the discourse on gender and financial literacy in a culturally unique setting.

The rest of this article is organized as follows. Section 2 covers related work. Section 3 details the methodology. Section 4 presents the financial literacy test. Section 5 analyzes the data. Section 6 provides the research results. Section 7 discusses the main findings. Section 8 concludes the paper.

2. LITERATURE REVIEW

Financial literacy refers to the information and skills required for effective management. This is a vital component of personal finance for ensuring financial independence and stability. According to Khan et al. (2022), improved financial literacy enables people to manage their savings, investments, and debt, thereby increasing their use of digital financial services. Although financial literacy is important for men and women, some studies have established that women often lag behind men. This section presents an extensive literature review on women's financial literacy. Recent studies emphasize that digital financial literacy, demographic diversity, and inclusive financial practices significantly contribute to women's financial empowerment and overall financial development in emerging economies (Ansari et al., 2024; Ansari & Bansal, 2025).

Women in developed countries have lower financial literacy rates than men. One study considered data from 144 nations and discovered that, on average, women had a financial literacy rate of 35%, whereas men had a rate of 39% (Akin et al., 2012). It has also been observed that nations with lower overall financial literacy have more significant gender gaps in financial literacy (Akin et al., 2012). A poll of 1,000 women who had completed a financial education program revealed that 70% of the respondents reported greater financial awareness, while 80% indicated positive improvements in financial behavior.

Overall, findings from developed nations consistently demonstrate a gender gap in financial literacy, where women display lower levels of financial knowledge and confidence than men. These results highlight the persistent nature of gender-based disparities across different cultural and economic contexts and establish a foundation for examining similar patterns in emerging economies such as Saudi Arabia.

Financial inclusion and literacy are positively correlated. Fonseca et al. (2012) concluded that financial education initiatives can help women become financially aware and engaged. Financially informed women were observed to be more inclined to plan for and save for retirement. Other studies (de Bassa Scheresberg, 2013) have identified the cultural and social aspects that contribute to women's financial literacy. For instance, a study by the Asian Development Bank discovered a favorable correlation between women's access to financial services and their participation in the labor force. These findings indicate that cultural attitudes toward women's financial independence can impact their financial literacy and behavior (Cohen et al., 2008; de Bassa Scheresberg, 2013; Dietz et al., 2003; Dyson & Renk, 2006).

According to data analysis (Lusardi & Mitchell, 2014), women are financially less literate than men, especially regarding investment, compound interest, and inflation. Goldman et al. (2011) examined existing studies on women's financial literacy and contended that women frequently earn less, have reduced access to credit, and possess less financial independence compared to men. In this regard, a study (Alquwez et al., 2021) where 1,200 Saudi women were surveyed established that only 22.5% had a high level of financial literacy, 48.5% had a moderate level, and 29% had a low level. The research also revealed that women with higher salaries and educational levels were more likely to be financially knowledgeable. Similarly, another study conducted in 2020 (Alatawi & AlShahrani, 2020) surveyed 358 female university students in Saudi Arabia and found that only 25.7% had a high level of financial literacy, 62.3% had a moderate level, and 12% had a low level. Based on these findings (Ansari et al., 2023), emphasis should be placed on fostering women's financial literacy.

Existing Saudi studies reveal moderate to low financial literacy levels among women, with education and income emerging as significant determinants. However, these studies primarily focus on descriptive outcomes and rarely explore how socio-cultural and demographic factors interact to shape empowerment. This limitation provides a key motivation for the present research.

Some studies (Fernandes et al., 2014; Sun et al., 2022) have elaborated that financial training programs should extend beyond teaching basic financial concepts in order to address social issues. Economic, cultural, and social factors affect women's financial security. Researchers emphasize

that financial education programs should not only enhance knowledge but also promote self-confidence, empowerment, and decision-making skills among women. In a meta-analysis of 126 studies, women consistently scored worse in financial literacy than did men across all nations and age groups. The findings also indicate that financial awareness is positively correlated with income, education, and age, suggesting that financial education programs should target women at risk of financial insecurity. Similarly, another argument was presented (Fernandes et al., 2014), stating that financial education programs should consider that women have different financial needs and preferences than men and that gender-sensitive approaches are needed to address women's unique financial challenges. Financial literacy programs offer excellent solutions to the shortcomings of financial decision-making (Ansari et al., 2023). Together, these studies confirm that enhancing financial literacy is not merely an educational goal but a multidimensional empowerment process that addresses gender disparities and fosters inclusive economic participation.

Moreover, some studies have examined women's financial literacy in Pakistan and identified factors that affect it (Farrell et al., 2016; Fosnacht & Calderone, 2017; Gonçalves et al., 2021; Saeed et al., 2019). Four hundred women from various locations in Pakistan were pooled, and the results were analyzed using descriptive statistics and regression analysis. Furthermore, the Invest in Girls program was introduced to tackle gender disparities in financial literacy, and its effectiveness has been studied (Park et al., 2021). The findings indicate that this program has positive consequences for students, strengthens their financial abilities, and prompts them to investigate broad professional routes that are useful in finance. One review, Rushi (2022), observed that Indian women face cultural, financial, psychological, and physical barriers that hinder learning. The role of financial literacy among Saudi women has also been explored using social cognitive theory (Ali et al., 2021). In this study, Ali et al. (2021), data from 1,368 women were collected, followed by applying partial least squares (PLS) path modeling techniques using SmartPLS to validate the suggested hypotheses. One study, Preston and Wright (2023), examined the link between gender differences in financial literacy and pension savings. An examination of microdata from households, income, and labor dynamics in Australia indicates that gender disparities in pension savings are mostly due to a lack of financial learning. This study suggests that increasing women's financial knowledge can lead to a better retirement lifestyle. There are also some platforms, such as fintech, in which efforts have been made to reduce the gender gap in financial inclusion, such as in sub-Saharan Africa. Their role was studied (Yeyouomo et al., 2023) by providing experimental evidence using a multilevel Tobit-regression model. These findings raise questions regarding the potential of fintech development to address this disparity. Another study, Hsu et al. (2021), established that financial literacy reduces gender discrepancies in behavioral biases. The study was conducted using an online survey of investors, and the findings indicate that women are considerably more regret-averse than men. In contrast, men had higher levels of self-attribution, a sense of control, and confirmation prejudice. However, when the financial literacy level was high, no behavioral biases were found for either gender. The cumulative evidence from Pakistan, India, and other developing contexts emphasizes that both cultural and educational factors influence women's financial literacy outcomes. These studies collectively reinforce the importance of targeted, context-sensitive financial education programs that consider cultural norms and gender-specific barriers.

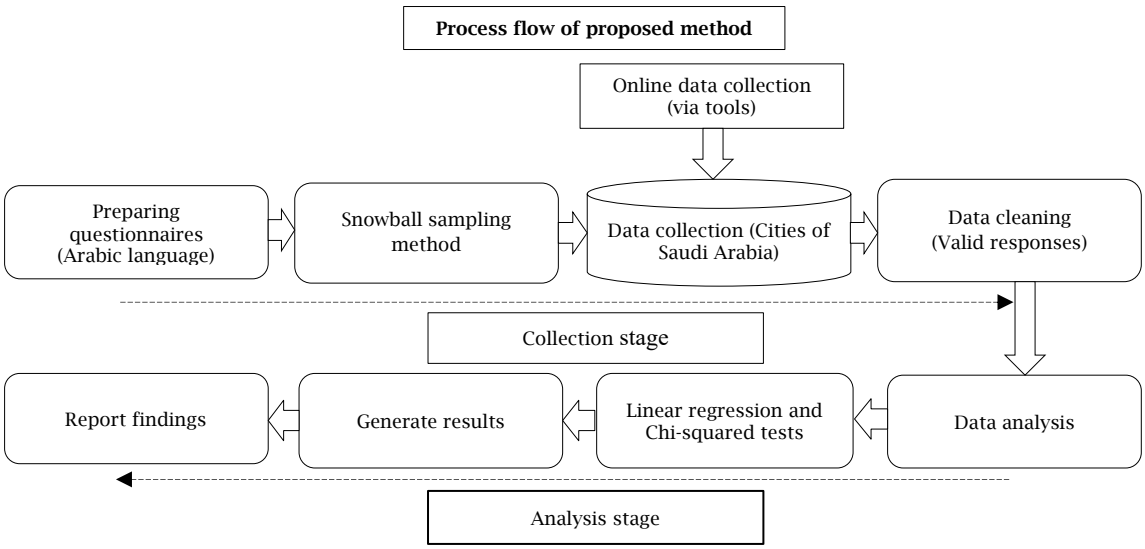
Financial literacy has also been explored from an Asian perspective. This essential skill is becoming increasingly important in modern society. According to research, women in Asia, similar to women globally, have lower financial literacy than men. However, a growing focus has recently been placed on promoting financial literacy among Asian women. Some studies have investigated major findings on financial literacy among Asian women (Akin et al., 2012; Henseler et al., 2015; Karakurum-Ozdemir et al., 2019; Lusardi & Mitchell, 2008; Lusardi & Mitchell, 2022). According to a study conducted in India (Tilak et al., 2023), women's financial literacy is positively correlated with income, education, and financial literacy. Some researchers suggest that promoting financial literacy programs for women could improve their financial skills, increase access to financial services, and help women achieve greater financial independence (Patnaik et al., 2024). In another Indonesian study, financial literacy positively affected women's engagement (Hati & Wibowo, 2017). These findings indicate that financial knowledge programs for women should be designed to address the specific needs of women employed in the informal sector, which is common in many Asian countries (Perry & Morris, 2006; Philippas & Avdoulas, 2020; Pinto et al., 2005). According to a Malaysian study, gender roles and cultural norms significantly affect women's financial literacy. Women with more autonomy and control over their finances were financially more literate. The authors suggested that promoting financial literacy programs that address cultural attitudes toward women's financial independence could help improve women's financial literacy in Malaysia and other Asian countries (Lusardi & Mitchell, 2014; Zahera & Bansal, 2018, 2019). These studies collectively indicate that while Asian women often face cultural barriers, tailored financial education initiatives such as mobile-based learning and community workshops can effectively bridge the gender literacy gap and support empowerment. The involvement of women in economic activities, either as entrepreneurs or employees, contributes to enhanced economic variety, efficiency, and creative advancement (Arshad, 2023). According to Rahman and Rahman (2023), economic empowerment significantly influences women's autonomy and well-being, and financial literacy is a crucial component of this empowerment process. This level of autonomy is essential for promoting women's independence in households and communities (Dhaene et al., 2017). Evidence from Asian contexts reinforces that women's financial literacy is shaped by cultural norms, educational access, and empowerment opportunities. These findings collectively support the rationale for this study, which investigates the demographic and social factors affecting women's financial literacy and empowerment within Saudi Arabia.

This literature review underscores the significance of enhancing financial literacy among Asian women. Financial education programs that address women's needs and issues in various communities can lead to improved skills, greater access to financial services, and the ability to make wise decisions (Zahera & Bansal, 2019).

3. RESEARCH METHODOLOGY

This section explains the systematic process used in this empirical study, including data collection and analysis, to assess the impact of financial literacy on Saudi women (Figure 1). This study followed a quantitative and cross-sectional research design, chosen for its ability to statistically analyze relationships between variables and generalize results to a larger population. While qualitative approaches such as focus group discussions or interviews could have provided deeper behavioral insights, they were not feasible due to the large and geographically dispersed sample. Therefore, a structured quantitative approach was adopted for accuracy and replicability. The study assessed women's financial literacy across five key areas, such as budgeting, savings, investment, insurance, and retirement planning, to capture both traditional and behavioral dimensions of financial capability.

Figure 1. Pictorial overview of the proposed methodology



3.1. Descriptive statistics

Descriptive statistics were used to effectively summarize and clearly present the data. It was also used to compare financial literacy performance across the five knowledge domains (budgeting, savings, investment, insurance, and retirement planning). Measures such as frequency, mean, and standard deviation were computed to identify demographic trends and summarize literacy levels before inferential testing. This approach enabled the identification of central patterns and variations within the dataset, providing a foundation for subsequent hypothesis testing.

3.2. Survey search

Surveys are commonly used to collect data on women's financial literacy. They allow the collection of large volumes of standardized responses across diverse regions, making them ideal for quantitative studies of this kind.

This study examined Saudi women's financial empowerment and literacy. The study team used self-administered structured survey questionnaires and online data-collection tools to collect data from women in various cities in Saudi Arabia. The survey included items related to budgeting, savings, investment, insurance, and retirement planning, along with demographic and socioeconomic questions. To improve the generalizability of the results, the sample selection process included individuals from different socioeconomic backgrounds. The survey questionnaire was made available in Arabic for respondents' convenience and to increase the response rate. Because there was no comprehensive population list of Saudi women, a non-probability convenience sampling method was employed to reach a broad, diverse audience efficiently. This approach ensured the inclusion of women from various ages, incomes, and educational groups. Convenience sampling is a method in which individuals participating in data collection are asked to assist researchers in identifying appropriate participants. A total of 1,566 valid responses were collected and used for data analysis, representing a sufficient sample size for the statistical methods applied.

Other methods, such as stratified random sampling or mixed-mode surveys (online and face-to-face) could also have been considered; however, convenience sampling was selected as the most practical and efficient given time and access constraints. Alternative methods, such as stratified random sampling or quota sampling, could also have been applied to ensure proportional representation of subgroups. However, due to logistical limitations and accessibility constraints, convenience sampling was considered the most practical and efficient approach. The Ethics Committee approved the research goals and online surveys. The researchers obtained all the necessary

ethical approval from an institutional review board or another suitable institutional authority when required. Each explanatory variable was clearly defined, including its measurement scale and relevance to the research question.

Table 1. Description of explanatory variables

Variable	*Type of variable*	*Description/measurement*
Education	Categorical	Primary, secondary, or tertiary
Income	Continuous	Monthly income in the Saudi riyal (SAR)
Age	Continuous	Respondents' age in years
Gender	Binary	Male or female
Employment status	Categorical	Employed, unemployed, or a student
Marital status	Categorical	Single, married, divorced, or widowed

3.3. Chi-squared tests and linear regression models

To obtain meaningful insights into the financial literacy of women in Saudi Arabia, Chi-squared tests and linear regression models were employed. More precisely, the Chi-squared test (Chi^2 test) is a statistical method for testing a hypothesis to examine contingency tables in which the size of the population is large. The Chi-square test formula is given in Eq. (1).

$$x_c{}^2 = \frac{\sum(O_i - E_i)^2}{E_i} \quad (1)$$

where:

- c denotes the degrees of freedom;
- O denotes the observed values;
- E denotes the expected values.

In this study, Chi-squared tests were used to determine whether the distribution of the answers differed between men and women. This test was suitable for analyzing categorical variables such as gender, education, and employment status to detect differences in literacy levels.

Linear regression models were used to obtain information on financial literacy among Saudi women. Regression estimates were used to define the data and illustrate relationships. This method was chosen due to its simplicity, interpretability, and ability to evaluate multiple independent variables simultaneously.

The relationship estimated by the model comprises independent and dependent variables, which are called explanatory and scalar response variables, respectively. To minimize prediction or forecasting errors, linear regression can be employed to develop a predictive model based on a dataset that contains both dependent and independent variables. Subsequently, a fitted model was used to predict dependent variables. Linear regression analysis can assess the strength of the connection between dependent and independent variables, identify whether there is no linear association between the independent variables and the dependent variable, or determine which independent variables contribute to the redundant response data. The dependent variable was the percentage of participants who answered all three financial literacy questions correctly. For improved robustness, additional control variables such as income level, region, household size, and employment type were added to the regression models. In this study, we designed six different linear regression models, the equations for which are given in Eq. (2)–Eq. (7):

$$Y = C + \beta Female \quad (2)$$

$$Y = C + \beta_1 Female + \beta_2 Age \quad (3)$$

$$Y = C + \beta_1 Female + \beta_2 Age + \beta_3 Living \quad (4)$$

$$Y = C + \beta_1 Female + \beta_2 Age + \beta_3 Living + \beta_4 Marital\ status \quad (5)$$

$$Y = C + \beta_1 Female + \beta_2 Age + \beta_3 Living + \beta_4 Marital\ status + \beta_5 Education \quad (6)$$

$$Y = C + \beta_1 Female + \beta_2 Age + \beta_3 Living + \beta_4 Marital\ status + \beta_5 Education + \beta_6 Job\ status \quad (7)$$

where:

- Y denotes a dependent variable;
- β_1–β_6 are the coefficients of the model;
- C is the constant term;
- and *Female*, *Age*, *Living*, *Marital status*, Education, and *Job status* are the independent variables.

Eq. (2) is referred to as model 1, Eq. (3) is model 2, Eq. (4) is model 3, Eq. (5) is model 4, Eq. (6) is model 5, and Eq. (7) is model 6. The dataset contained 1566 samples corresponding to the survey participants. R-squared is reported to analyze the regression results, error values, model coefficients, t-statistics, significance, and R^2. More precisely, in a regression model, R-squared is the coefficient of determination and a statistical measure that denotes the percentage of the dependent variable's variation associated with the independent variable (i.e., *Female*, *Age*, *Living*, *Marital status*, *Education*, and *Job status*). Mathematically, it is computed using Eq. (8):

$$R^2 = 1 - \frac{RSS}{TSS} \quad (8)$$

where:

- RSS denotes the sum of the squares of the residuals;
- and TSS is the total sum of squares.

Additionally, a t-statistic was employed to support or reject the null hypotheses. It is the ratio of a parameter's anticipated value to its hypothesized estimate divided by its standard error. Mathematically, this is computed using Eq. (9):

$$t_B = \frac{B - B_0}{SE(B)} \quad (9)$$

where:

- B denotes the estimator of the parameter;
- B_0 is a known constant (nonrandom);
- $SE(B)$ is the standard error of the estimator.

The ideal t-statistics have a statistically significant value, indicating that the disparity between the two samples is unlikely to arise by coincidence.

Alternative analytical methods, such as logistic regression, which is suitable for binary dependent variables, or structural equation modeling, which allows simultaneous estimation of complex relationships, could also have been considered. However, linear regression and Chi-squared analysis were selected for their simplicity, interpretability, and alignment with the study's objectives.

4. FINANCIAL LITERACY TEST

4.1. Test design

Description of the test structure includes the three core areas of financial knowledge assessed (budgeting, savings, and investment).

The goals of a financial literacy test are:

- Assess the knowledge, skills, and understanding of financial concepts such as budgeting, savings, investment, and credit management among the target population.
- Identify the demographic group (e.g., women in Saudi Arabia) and tailor the test to their financial knowledge level and cultural context.

Financial knowledge is:

- Understanding fundamental concepts like interest rates, inflation, and risk diversification.
- Sample question: *"If you save SAR 100 in an account earning 5% annual interest, how much will you have after one year?"*

The question types are as follows:

- Multiple-choice questions: To assess factual knowledge.
- Scenario-based questions: To evaluate decision-making skills.
- Likert-scale questions: To measure attitudes and behaviors.

The scoring system is presented below:

- Assign points to correct answers; higher scores indicate better financial literacy.
- Example: Allocate one point for each correct answer with a total possible score of 100.

Piloting the test: Pre-test validation is as follows:

- Perform a preliminary test with a small, representative group to verify that the questions are understandable, pertinent, and sufficiently challenging.
- Collect feedback to refine ambiguous or difficult questions.

The test is administered in the following way:

- Sampling method: Choose an appropriate sampling method (e.g., convenience sampling) to ensure a diverse and representative sample.
- Distribution channels: Deliver the test through online surveys, in-person interviews, or paper-based formats, depending on accessibility and technological familiarity.
- Time limit: A reasonable time limit was set to prevent respondent fatigue while ensuring thoughtful responses.

4.2. Analysis of the results

Participants were divided into categories based on their financial literacy, with levels defined as low (0–40), moderate (41–70), or high (71–100).

The statistical methods used:

- Descriptive statistics (mean, median, and standard deviation) were used to summarize the results.
- Inferential statistical methods, such as Chi-squared tests and regression analysis, were used to investigate the connections between demographic variables, such as education and income, and financial literacy scores.

Insights: Identify trends (e.g., demographic groups with lower scores) and highlight key findings (e.g., gender differences in literacy).

5. DATA ANALYSIS

Although many respondents were invited to participate in the data-collection process, only 1566 legitimate replies were collected and included in the data analysis. Based on the most recent recommendations and subsequent pertinent entrepreneurial research studies (Lin et al., 2022; Ali et al., 2019), linear regression was used as the statistical method to analyze the data in this study. The research model was estimated using a structural model that analyzed the connections between independent and dependent elements and addressed issues of collinearity. This model can simultaneously analyze several gender and dummy financial literacy models. The total number of responses received was 1566.

Figure 2 presents a detailed pictorial representation of the participants and respondents of different age groups. For example, 2.3% of the individuals were 60 years or older, 9.26% were 40–60, 39.4% were 31–45, 21.01% were 25–30, and 28.03% were 18–24. The participants' locations varied, with approximately 53.83% living in large cities (Figure 3). The study found that 56.64% of participants were female and 43.36% were male. Most participants were single (48.53%), and a smaller percentage were married, widowed, divorced, or chose not to disclose their marital status (Table 2). The participants were spread across different regions of Saudi Arabia, with the highest percentages in Riyadh province (36.5%) and Makkah province (18.2%), as shown in Figure 4a. Most participants (53.7%) held bachelor's degrees, as shown in Figure 4b. Table 3 provides participant information, including employment status, work organization, and specialization. The majority of participants were students (52.68%), followed by employed individuals (5.62%) and those in other occupations (12.2%). Government employees comprised 32.50% of the participants, and approximately 36.85% worked in administrative specializations.

Figure 2. Distribution of age groups in data collection (numbers and percentages)

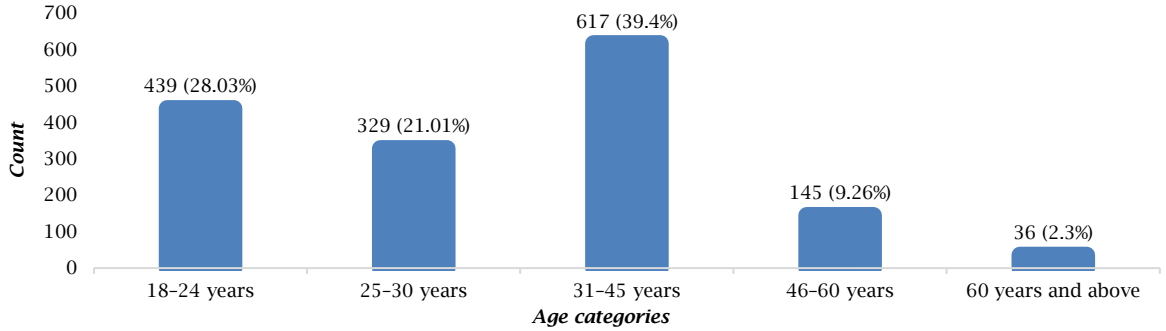


Figure 3. Distribution of locations/area in data collection (numbers and percentages)

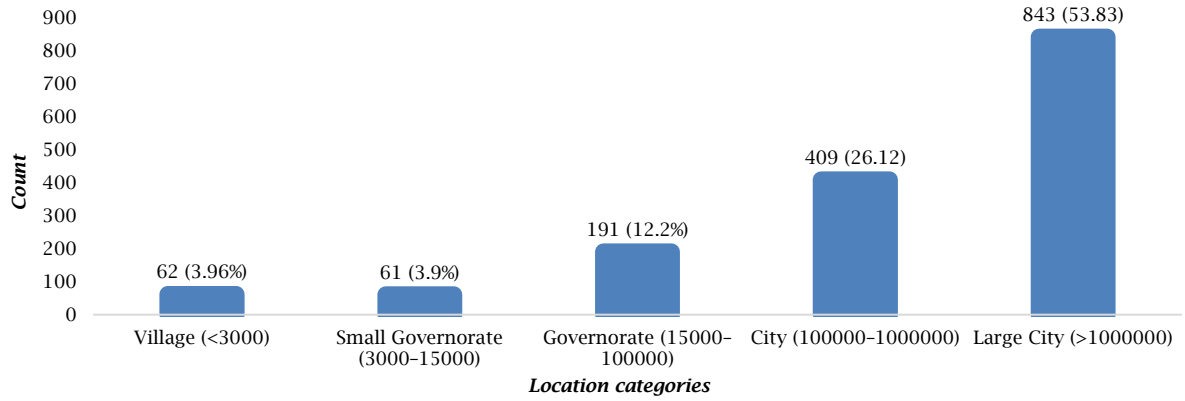


Table 2. Demographic characteristics of participants

Variable	*N = 1566*	*Percentage, %*
Gender		
Male	679	43.36
Female	887	56.64
Marital status		
Single	721	46.04
Married	760	48.53
Widowed	9	0.57
Divorced	52	3.32
I do not wish to answer	24	1.53

Figure 4a. Distribution of participants by region (%) in Saudi Arabia

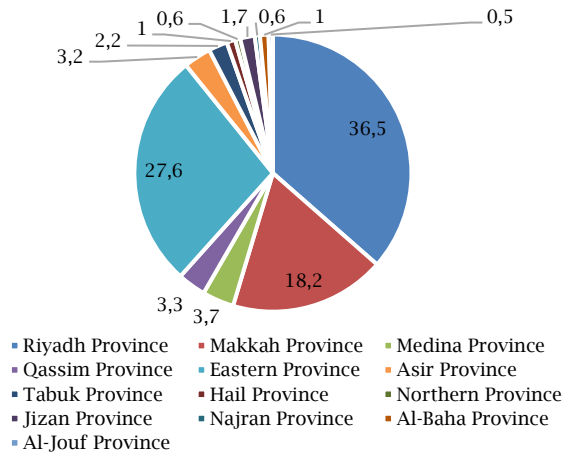


Figure 4b. Distribution of academic qualifications (%) of participants in the survey

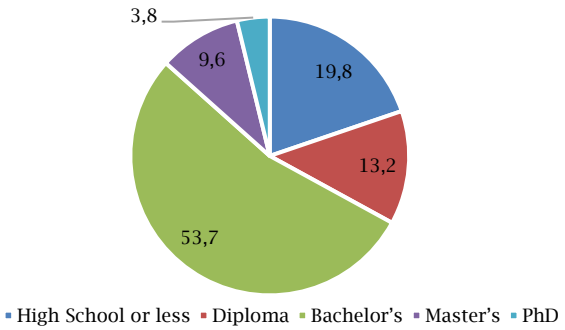


Table 3. Employment details of participants in data collection

Variable	*N = 1566*	*Percentage, %*
Employment status		
Student	462	29.50
Employee	825	52.68
Retired	88	5.62
Others	191	12.20
Employer		
Governmental	509	32.50
Military	107	6.83
Private sector	421	26.88
The charitable and non-profit sector	24	1.53
Do not apply	481	30.72
Others	24	1.53
Specialization		
Administrative	577	36.85
Engineering	152	9.71
Medical	140	8.94
Humanitarian	178	11.37
Others	519	33.14

Tables 4 and 5 display the participants' responses to the scenario questions. The first scenario involves calculating the growth of a savings account over five years at a 2% interest rate. In this scenario, 73.24% selected "More than 102 riyals", while 3.83% chose "Exactly 102" (Table 4). The second scenario asked about purchasing power with a 1% interest rate and 2% inflation rate. Here, 42.98% selected "less", and only 11.30% of participants chose "more" (Table 5).

Table 4. Replies to scenario question No. 1

Responses	*N = 1566*	*Percentage, %*
More than 102 riyals*	1147	73.24
Exactly 102.	60	3.83
Less than 102 riyals.	91	5.81
I don't know.	243	15.52
I refuse to answer.	25	1.60

*Note: Scenario question: "Suppose you have 100 riyals in a savings account, and the annual interest rate is 2%; if we let the money grow for five years, then the amount is in the account". * Indicates the correct answer.*
Source: Authors' calculations.

Table 5. Replies to scenario question No. 2

Responses	*N = 1566*	*Percentage, %*
More	177	11.30
Less	673	42.98
Equal	195	12.45
I don't know	521	33.27

Note: Scenario question: "Suppose the interest rate on your savings account is 1% per annum and the inflation rate is 2% per annum. One year later, you will be able to purchase products with the amount available in this account".
Source: Authors' calculations.

Table 6. Replies to true/false questions

Responses	*N = 1566*	*Percentage, %*
False	218	13.92
True	884	56.45
I don't know	464	29.63

Note: True/false question: "How true is the following statement? — Buying one company's stock usually provides a safer return than a stock mutual fund".
Source: Authors' calculations.

6. RESULTS

This section provides a detailed analysis of financial literacy among women, along with the results acquired after data collection.

6.1. Financial literacy among women

This study used Chi-squared tests and linear regression models to analyze financial literacy among Saudi women. Table 7 indicates that most female participants correctly answered the interest rate question. The percentages of males and females were approximately 37.1% and 62.9%, with interest rates of 62.6% and 81.4%, respectively. Overall, the population's financial literacy regarding interest rate questions was 73.2%, indicating a strong awareness of financial concepts among Saudis. A significant proportion of Saudis have a good understanding of financial concepts. Female respondents were more likely to provide correct answers and to admit when they did not know the solution.

Table 7. Statistics for the interest rate question with gender as a variable

Responses	*Male*	*Female*	*Total sample*
More than 102 riyals*	425	722	1147
% within interest rate	37.1%	62.9%	100.0%
% within gender	62.6%	81.4%	73.2%
Exactly 102 riyals	32	28	60
% within interest rate	53.3%	46.7%	100.0%
% within gender	4.7%	3.2%	3.8%
Less than 102 riyals	46	45	91
% within interest rate	50.5%	49.5%	100.0%
% within gender	6.8%	5.1%	5.8%
I don't know	167	76	243
% within interest rate	68.7%	31.3%	100.0%
% within gender	24.6%	8.6%	15.5%
I refuse to answer	9	16	25
% within interest rate	36.0%	64.0%	100.0%
% within gender	1.3%	1.8%	1.6%
Chi² tests	***Value***	***df***	***Sig.***
Pearson Chi²	87.130[a]	4	0.000

*Note: Chi-squared tests were used to determine whether the distribution of answers differed between men and women. * Indicates the correct answer. a. This was used to calculate the significance of the two categorical variables. If the p-value is less than 0.05, it means there is a significant association between the two variables.*
Source: Authors' calculations.

The Chi-squared test yielded a value of 87.130 with one degree of freedom, highlighting a gender difference in the responses to the interest rate question. Women were more likely to provide accurate answers to the questions. Furthermore, by examining the responses to this question, Table 7 sheds light on possible inequalities, highlighting areas that may necessitate targeted financial awareness programs or policies to encourage equitable knowledge of finances across genders in the Saudi population.

Table 8. Statistics for inflation question with gender as a control variable

Responses	*Male*	*Female*	*Total sample*
More	87	90	177
% within inflation	49.2%	50.8%	100.0%
% within gender	12.8%	10.1%	11.3%
Less*	200	473	673
% within inflation	29.7%	70.3%	100.0%
% within gender	29.5%	53.3%	43.0%
Equal	101	94	195
% within inflation	51.8%	48.2%	100.0%
% within gender	14.9%	10.6%	12.5%
I don't know	291	230	521
% within inflation	55.9%	44.1%	100.0%
% within gender	42.9%	25.9%	33.3%
Chi² tests	***Value***	***df***	***Sig.***
Pearson Chi²	92.185	3	0.000

*Note: Chi-squared tests were used to determine whether the distribution of answers differed between men and women. * Indicates the correct answer. a. This was used to calculate the significance of the two categorical variables. If the p-value is less than 0.05, it means there is a significant association between the two variables.*
Source: Authors' calculations.

The results are presented in Table 8. A larger division of Saudis is familiar with inflation concepts. The results of the chi-squared test are also provided in Table 8, with a value of 92.185%, along with three degrees of freedom. This statistical measure indicates that men's and women's responses to the inflation issue differ significantly among the 1566 people polled. The estimated chi-square test result of 92.185% indicated that the observed variations in the answers were unlikely to arise by chance, underlining the trustworthiness of the findings. These results also suggest that there is a gender gap in inflation. These findings will be helpful in the development of targeted treatments and financial education initiatives.

Table 9. Statistics for the risk diversification question with gender as a control variable

Responses	*Male*	*Female*	*Total sample*
False*	125	93	218
% within risk diversification	57.3%	42.7%	100.0%
% within gender	18.4%	10.5%	13.9%
True	300	584	884
% within risk diversification	33.9%	66.1%	100.0%
% within gender	44.2%	65.8%	56.4%
I do not know	254	210	464
% within risk diversification	54.7%	45.3%	100.0%
% within gender	37.4%	23.7%	29.6%
Chi² tests	***Value***	***df***	***Sig.***
Pearson Chi²	73.784	2	0.000

Note: Chi-squared tests were used to determine whether the distribution of responses differed between men and women.
** Indicates correct answer.*
Source: Authors' calculations.

Table 9 illustrates the financial literacy of the Saudi Arabian population, emphasizing the gender disparities and risk diversification. A "true/false" question about stock investments indicated that only 13.9% of respondents understood risk diversification. This low percentage implies that many Saudis must improve their understanding of this concept. Males outperformed females in their responses, with 10.5% of women and 18.4% of men providing correct answers. Males (37.4%) were more likely to respond with "I do not know" compared to females (23.7%). When examining risk diversification by gender, the proportion of male and female participants was approximately 54.7% and 45.3%, respectively. The results of the chi-squared test are shown in Table 9, with a value of 73.784% and 2 degrees of freedom. This value indicates that responses to the risk diversification question varied significantly between men and women. The findings indicate a disparity in risk diversification between genders, with men being more inclined to select the correct response when questioned on this subject. These findings highlight gender-based differences and prompt an investigation into the underlying causes of this trend. Possible causes include sociocultural influences, educational backgrounds, and differing risk assessments between men and women.

Table 10 displays the results for all three questions regarding the financial literacy of the population, highlighting the differences between men and women in Saudi Arabia. Table 10 aggregates the findings of the questions to determine gender gaps and explore women's financial expertise. The results show that financial literacy is quite good at a rate of 27.0%. Many Saudis are well-versed in interest rates, inflation, and risk diversification. Additionally, 27% of the participants responded accurately to all three questions. Most significantly, more women answered each of the three financial literacy questions correctly, with a greater percentage of women responding correctly than men.

Table 10. Combined statistics for all three correct questions

Responses	*Male*	*Female*	*Total sample*
Incorrect	580	563	1143
% within all three correct	50.7%	49.3%	100.0%
% within gender	85.4%	63.5%	73.0%
Correct	99	324	423
% within all three correct	23.4%	76.6%	100.0%
% within gender	14.6%	36.5%	27.0%
Total	679	887	1566
% within all three correct	43.4%	56.6%	100.0%
Chi²-tests	***Value***	***df***	***Sig.***
Pearson Chi²	93.964	1	0.000

Note: Chi-squared tests were used to determine whether the distribution of answers differed between men and women.
Source: Authors' calculations.

Men outperformed women, with a larger percentage of men answering all three questions correctly. For instance, only 14.6% of men answered all three questions correctly compared to 36.5% of women. This indicates a significant gender difference in the answers. Men provided the most inaccurate answers (85.4%), while only 63.5% of women did. The chi-squared test results, showing 93.964%, indicated a notable gender disparity in the answers to the financial literacy questions among the 1566 participants.

Table 11 presents data on financial literacy in Saudi Arabia, focusing on interest rates and inflation. Many Saudis are familiar with the concepts of interest rate and inflation. Financial literacy was rated at 30.4%, with a higher percentage of women answering questions correctly than men. It is noteworthy that women tend to answer questions about inflation and interest rates more accurately than men. Specifically, 40.6% of women answered all three questions correctly, while only 17.0% of men did.

Additionally, men provided more incorrect answers (83.0%) than women (59.4%). This disparity in results highlights a different pattern of financial literacy, particularly when handling risk measures. The chi-squared test results (93.964%) indicated a significant difference in responses between men and women, highlighting a distinct pattern in financial literacy, especially regarding risk measures.

Table 11. Statistics for interest and inflation question

Responses	*Male*	*Female*	*Total sample*
No	563	527	1090
% within two correct	51.7%	48.3%	100.0%
% within gender	83.0%	59.4%	69.6%
Yes	115_a	360_b	475
% within two correct	24.2%	75.8%	100.0%
% within gender	17.0%	40.6%	30.4%
Total	678	887	1565
% within two correct	43.3%	56.7%	100.0%
Chi² tests	***Value***	***df***	***Sig.***
Pearson Chi²	101.456	1	0.000

Note: Chi-squared tests were used to determine whether the distribution of answers differed between men and women. This was used to calculate the significance of the two categorical variables. If the p-value is less than 0.05, it means there is a significant association between the two variables.
Source: Authors' calculations.

Table 12. Summary statistics for one "I don't know" question

Responses	*Male*	*Female*	*Total sample*
No	512	811	1323
% within one "I don't know".	38.7%	61.3%	100.0%
% within gender	75.4%	91.4%	84.5%
Yes	167	76	243
% within one "I don't know".	68.7%	31.3%	100.0%
% within gender	24.6%	8.6%	15.5%
Total	679	887	1566
% within one "I don't know".	43.4%	56.6%	100.0%
Chi² tests	***Value***	***df***	***Sign***
Pearson Chi²	75.355	1	0.000

Note: Chi-squared tests were used to determine whether the distribution of answers differed between men and women. This was used to calculate the significance of the two categorical variables. If the p-value is less than 0.05, it means there is a significant association between the two variables.
Source: Authors' calculations.

Table 12 illustrates the discrepancies between men and women in Saudi Arabia regarding responses to "I don't know" questions. Saudi Arabia had a high level of financial literacy (15.5%). A significant proportion of Saudi citizens are knowledgeable about financial issues. Women are less likely to choose "I don't know" than men, with 8.6% of women selecting this response versus 24.6% of men. Women predominantly answered 'no' to this question (61.3%), whereas men comprised only 38.7% of the responses. The chi-squared test indicated a significant difference in responses between the genders. These findings suggest that addressing this disparity can assist women in attaining greater financial autonomy and resilience and foster a more inclusive and equitable socioeconomic landscape.

The results of the three "I don't know" answers to the questions are summarized in Table 13, highlighting the differences between men and women in Saudi Arabia. The study found that 94.6% of respondents in Saudi Arabia demonstrated a high level of financial literacy, as they answered "no" to all three questions. A substantial proportion of Saudi citizens understand the complexity of financial literacy. Only 5.4% answered "I don't know" to all questions, with men being more likely to respond this way than women. Similarly, fewer women than men chose "I don't know" as a response. For instance, 3.6% of women selected this option, while 7.7% of men chose "I don't know." Men provided "no" answers to this question most often (61.9%) compared to 38.1% of women. The chi-squared test results (12.431%) indicated a notable difference in how men and women responded to the "I don't know" option, highlighting the importance of understanding gender differences in financial literacy and how individuals address uncertainties or gaps in their knowledge. These chi-squared test findings reveal the complexity behind "I don't know" replies. This disparity is crucial for recognizing the overall level of financial literacy and the subtle ways different genders confront uncertainties or demonstrate knowledge gaps.

Table 14 illustrates misperceptions of financial literacy among men and women in Saudi Arabia. Only 16.8% answered incorrectly, indicating room for improvement. Notably, women selected incorrect answers less frequently than men. Specifically, 11.0% of women chose incorrect options, compared to 24.3% of men. Additionally, women provided "no" answers more often (89.0%) than men (75.7%). A Chi-squared test score of 12.431 indicates that the differences in incorrect responses are statistically significant rather than random. This study highlights the need for equitable financial knowledge-sharing between genders.

Table 13. Summary statistics for three "I don't know" questions

Responses	*Male*	*Female*	*Total sample*
No	627	855	1482
% within three "I don't know".	42.3%	57.7%	100.0%
% within gender	92.3%	96.4%	94.6%
Yes	52	32	84
% within three "I don't know".	61.9%	38.1%	100.0%
% within gender	7.7%	3.6%	5.4%
Total	679	887	1566
% within three "I don't know".	43.4%	56.6%	100.0%
Chi² tests	***Value***	***df***	***Sig.***
Pearson Chi²	12.431	1	0.000

Note: Chi-squared tests were used to determine whether the distribution of answers differed between men and women. This was used to calculate the significance of the two categorical variables. If the p-value is less than 0.05, it means there is a significant association between the two variables.
Source: Authors' calculations.

Table 14. Summary statistics for all incorrect questions

Responses	*Male*	*Female*	*Total sample*
No	514	789	1303
% within none correct	39.4%	60.6%	100.0%
% within gender	75.7%	89.0%	83.2%
Yes	165	98	263
% within none correct	62.7%	37.3%	100.0%
% within gender	24.3%	11.0%	16.8%
Total	679	887	1566
% within none correct	43.4%	56.6%	100.0%
Chi² tests	***Value***	***df***	***Sig.***
Pearson Chi²	48.333	1	0.000

Note: Chi-squared tests were used to determine the distribution of answers between men and women.
Source: Authors' calculations.

6.2. Linear regression model findings

In Section 4.1, the findings consider how men and women differ in financial literacy by employing Chi-squared tests on responses acquired by posing different scenario-based questions to the participants. However, these inequalities persist when men and women have different demographic and economic characteristics. To answer this, regression models were designed and defined in Eq. (2)–Eq. (7), the results of which are given in Table 15. Theoretical models serve as the driving force behind the variables used in the regressions. The DV dummy variable in Table 15 was set to one for respondents who correctly answered all three financial literacy questions. These regressions are referred to as additional descriptive statistics to help identify whether gender variations in financial awareness are caused primarily by differences in education or income between men and women. To measure the gender effect, we added controls to the blocks of variables. More precisely, in Table 15, the first column lists the variable names used in the different models, starting with 1–6.

Table 15. Results of linear probability model: Dependent variables all correct

Variable	*B*	*Std. error*	*Beta*	*t*	*Sig.*	*N*	R^2
Model 1							
(Constant)	-0.293	0.057		-5.106	0.00	1566	0.060
Female	0.219	0.022	0.245	9.992	0.00		
Model 2							
(Constant)	-0.358	0.057		-6.224	0.00	1566	0.610
Female	0.180	0.022	0.201	8.012	0.00		
Age	0.070	0.011	0.167	6.644	0.00		
Model 3							
(Constant)	-0.373	0.069		-5.403	0.00	1566	0.058
Female	0.180	0.022	0.201	7.987	0.00		
Age	0.070	0.011	0.166	6.586	0.00		
Living	0.004	0.01	0.01	0.403	0.687		
Model 4							
(Constant)	-0.375	0.071		-5.246	0.00	1566	0.049
Female	0.180	0.023	0.201	7.96	0.00		
Age	0.069	0.012	0.164	5.689	0.00		
Living	0.004	0.010	0.010	0.405	0.686		
Marital status	0.002	0.016	0.003	0.099	0.922		
Model 5							
(Constant)	-0.492	0.074		-6.69	0.00	1566	0.05
Female	0.186	0.022	0.207	8.295	0.00		
Age	0.053	0.012	0.127	4.334	0.00		
Living	-0.002	0.010	-0.005	-0.202	0.84		
Marital status	0.001	0.016	0.001	0.037	0.97		
Education	0.063	0.011	0.145	5.811	0.00		
Model 6							
(Constant)	-0.478	0.076		-6.254	0.00	1566	0.048
Female	0.185	0.022	0.207	8.268	0.00		
Age	0.057	0.014	0.136	4.238	0.00		
Living	-0.003	0.010	-0.006	-0.264	0.792		
Marital status	0.000	0.016	0.000	-0.007	0.994		
Education	0.063	0.011	0.145	5.803	0.00		
Job status	-0.009	0.013	-0.019	-0.7	0.484		

Note: This table presents the results of numerous linear regressions performed using diverse datasets. The dependent variable was the proportion of respondents who correctly answered the three financial literacy questions. The percentage of respondents who correctly answered the three questions regarding financial literacy was the baseline for all the regression models.
Source: Authors' calculations.

The column labeled "B" represents the coefficients of the independent variables in the regression model. These coefficients predict how the likelihood of the dependent variable being one (or the event happening) changes with a one-unit rise in the independent variable while keeping all other variables unchanged.

Similarly, *t* denotes the t-statistic, sig denotes significance, *N* represents the total number of samples, and R^2 denotes the R-squared value of the model in Table 15. It is observed from Table 15 that the lowest R^2 is attained with Model 6, in which all dependent variables are involved, including "*Female"*, "*Age"*, "*Living"*, "*Marital status"*, "*Education*," and "*Job* status", while the highest R^2 is attained with Model 2, in which only two independent variables are involved, i.e., "*Female*" and "*Age".* Similarly, almost all the models produced the lowest error values when analyzing the errors.

To address gender disparity in financial literacy, we introduced a new dummy variable along with a series of control variables for each regression model from Models 1 to 6. Saudi Arabia had the largest gender gap. Our findings demonstrated that female respondents were strongly related to all three correct responses, with a coefficient of 0.219. Age has frequently been identified as a positive and important factor for higher financial literacy. It is observed from Table 15 that age has been linked positively and significantly to financial literacy, while having perfect financial knowledge makes a "living". Unexpectedly, marital status had little impact on financial literacy, but with all three accurate responses, "education" level is relevant. Finally, complete financial literacy was observed to render work status insignificant.

7. DISCUSSION

The survey collected data from 1566 respondents. More than 39% of the respondents were between the ages of 31 and 45, and 28% were between 18 and 24. More than 36% were in business administration, 11% in humanitarian courses, and 33% in other courses. Approximately 53% of the students were enrolled in undergraduate courses. Approximately 48% of the respondents were married; more than 36% belonged to the Riyadh region, and 27% to the Eastern province. Furthermore, 32.50% were government employees, and 26% were in the private sector.

Demographic variables such as age, gender, and education were significantly associated with financial literacy inclinations, according to the findings of the symmetrical analysis. Several demographic variables, such as living status, marital status, and job status, were not strongly linked to the emergence of financial literacy among Saudi respondents (Ali et al., 2019). Overall, this study indicates that financial literacy significantly influences financial decision-making in women and that financial education programs can have an optimistic influence on women's financial knowledge and behavior. Further research is required to better understand the unique challenges women face in accessing financial education and to create effective solutions to address these obstacles.

The findings indicate that women are more financially aware than men are, and financial education initiatives should be developed to address women's unique issues. These programs should focus on teaching basic financial concepts, empowering women, and helping them build their skills. In conclusion, financial literacy is a critical issue for women, and a growing body of research has highlighted the unique challenges and factors that contribute to women's financial literacy. Although education and financial knowledge can help women increase their financial literacy, cultural and societal variables can also have major impacts. Consequently, it is crucial to establish thorough financial education initiatives that cater to the unique requirements of women, especially those from underrepresented groups.

This study suggests that financial literacy training should be tailored to women's unique requirements, particularly for underprivileged groups. They should consider the cultural and social factors that affect their financial behavior. In conclusion, this study highlights the importance of financial literacy programs for women. This study provides valuable recommendations for policymakers, financial institutions, and non-profit organizations to promote financial literacy among women in Saudi Arabia and similar contexts.

8. CONCLUSION

In Asian countries, financial literacy is crucial for women. Promoting financial literacy among women requires addressing specific needs and challenges that different communities face. Governments, nonprofit organizations, and financial institutions should collaborate to develop tailored financial literacy programs that address the social and cultural factors that limit women's financial empowerment. Enhancing financial literacy among women enables them to make well-informed financial choices and plays a role in boosting the economic growth and development of their communities. According to previous studies, women in many countries, particularly in Asia, have lower levels of financial literacy than men. This can be attributed to various factors, including cultural and societal norms, that limit women's financial independence and access to financial services. In some cultures, women are not encouraged to participate in financial decision-making, which can limit their exposure to financial knowledge and experiences. Furthermore, it has been discovered that women's financial literacy is favorably connected with their education, income, and financial understanding.

To enhance financial literacy among women, it is crucial to tackle cultural and societal norms that restrict their financial autonomy and limit access to financial services. Stereotypes and discrimination can exclude women from financial decision-making and limit their access to financial products and services. Therefore, financial literacy programs should address these social and cultural factors to empower women to control their finances. Surveys have revealed gender disparities in financial literacy, with women often having lower levels of financial comprehension than men. Research indicates that 35% of women answered four or five basic questions on financial literacy correctly, whereas this figure was 50% for men. However, some studies have found that these differences disappear when controlling for other factors such as education level, income, and age.

From a theoretical perspective, the findings reinforce the human capital and empowerment frameworks by demonstrating how education and financial knowledge enhance women's decision-making capacity and socioeconomic participation. The government has implemented new regulations and rules in Vision 2030 to increase women's share in the labor market and enhance financial literacy. However, there is a significant disparity in financial literacy levels between genders. Therefore, it is recommended that additional financial literacy programs tailored specifically for women be implemented. Promoting women's independence and empowerment can contribute to national advancement.

The research has some limitations. It focused mainly on Asian nations, which may limit the applicability of the results to other areas with different cultural and economic backgrounds. Data inconsistencies across countries can affect precision. Asia is extremely varied, with cultural norms differing greatly from country to country, making it challenging for a single method to address these differences effectively. Although factors such as education, income, and age are considered, other variables, such as urban versus rural environments, access to technology, and family dynamics, have not been thoroughly examined. The study presumes that financial literacy initiatives will be effective; however, it does not assess their real impact or long-term viability.

As for the future directions, a study comparing financial literacy programs across Asian nations can be conducted to identify best practices and models that can be expanded. The success of current financial literacy efforts under Vision 2030 and similar initiatives in other countries can be assessed. The psychological and behavioral obstacles that hinder women from participating in financial decision-making beyond cultural expectations can be explored. We propose policies that encourage financial institutions to develop products and services tailored for women. The progression of women's financial literacy over time can be monitored to gauge the long-term effects of educational and empowerment initiatives. The way elements such as age, marital status, and employment type intersect with gender to affect financial literacy of female employees can be analyzed.

REFERENCES

Akin, G. G., Aysan, A. F., Ozcelik, S., & Yildiran, L. (2012). Credit card satisfaction and financial literacy: Evidence from an emerging market economy. *Emerging Markets Finance and Trade, 48*(sup5), 103–115. https://doi.org/10.2753/REE1540-496X4806S508

Alatawi, Z., & AlShahrani, M. (2020). Self-use of skin-bleaching products among women attending a family medicine clinic: A cross-sectional study. *Journal of Dermatology and Dermatologic Surgery, 24*(2), 125–129. https://doi.org/10.4103/jdds.jdds_13_18

Ali, I., Ali, M., & Badghish, S. (2019). Symmetric and asymmetric modeling of entrepreneurial ecosystem in developing entrepreneurial intentions among female university students in Saudi Arabia. *International Journal of Gender and Entrepreneurship, 11*(4), 435–458. https://doi.org/10.1108/IJGE-02-2019-0039

Ali, M., Ali, I., Badghish, S., & Soomro, Y. A. (2021). Determinants of financial empowerment among women in Saudi Arabia. *Frontiers in Psychology, 12*, 1–10. https://doi.org/10.3389/fpsyg.2021.747255

Alquwez, N., Cruz, J. P., Al Thobaity, A., Almazan, J., Alabdulaziz, H., Alshammari, F., Albloushi, M., Tumala, R., & Albougami, A. (2021). Self-compassion influences the caring behaviour and compassion competence among Saudi nursing students: A multi-university study. *Nursing Open, 8*(5), 2732–2742. https://doi.org/10.1002/nop2.848

Ansari, Y., Albarrak, M. S., Sherfudeen, N., & Aman, A. (2023). Examining the relationship between financial literacy and demographic factors and the overconfidence of Saudi investors. *Finance Research Letters, 52*, 103582. https://doi.org/10.1016/j.frl.2022.103582

Ansari, Y., & Bansal, R. (2025). Evaluation of demographic variables and their impact on financial risk tolerance among women. *Risk Governance and Control: Financial Markets and Institutions*, 15(3), 64–83. https://doi.org/10.22495/rgcv15i3p5

Ansari, Y., Albarrak, M. S., & Alokley, S. A. (2024). Empirical examination of financial literacy among youths in the developing economy. *Risk Governance and Control: Financial Markets and Institutions, 14*(4), 123–135. https://doi.org/10.22495/rgcv14i4p12

Arshad, A. (2023). Nexus between financial inclusion and women empowerment: Evidence from developing countries. *Gender in Management: An International Journal, 38*(4), 561–580. https://doi.org/10.1108/GM-04-2022-0125

Becker, G. S. (1975). *Human capital: A theoretical and empirical analysis, with special reference to education*. National Bureau of Economic Research (NBER). https://www.nber.org/system/files/chapters/c3730/c3730.pdf

Bucher-Koenen, T., Lusardi, A., Alessie, R., & van Rooij, M. (2017). How financially literate are women? An overview and new insights. *Journal of Consumer Affairs, 51*(2), 255–283. https://doi.org/10.1111/joca.12121

Chhatwani, M., & Mishra, S. K. (2021). Financial fragility and financial optimism linkage during COVID-19: Does financial literacy matter? *Journal of Behavioral and Experimental Economics, 94*, Article 101751. https://doi.org/10.1016/j.socec.2021.101751

Cohen, M., Ben-Zur, H., & Rosenfeld, M. J. (2008). Sense of coherence, coping strategies, and test anxiety as predictors of test performance among college students. *International Journal of Stress Management, 15*(3), 289–303. https://doi.org/10.1037/1072-5245.15.3.289

Cziriak, M., Bucher-Koenen, T., & Alessie, R. (2024). *Beyond knowledge: Confidence and the gender gap in financial literacy* (Discussion Paper No. 24-083). https://shorturl.at/VRsUf

De Bassa Scheresberg, C. (2013). Financial literacy and financial behavior among young adults: Evidence and implications. *Numeracy, 6*(2), Article 5. https://doi.org/10.5038/1936-4660.6.2.5

Dhaene, J., Van Hulle, C., Wuyts, G., Schoubben, F., & Schoutens, W. (2017). Is the capital structure logic of corporate finance applicable to insurers? Review and analysis. *Journal of Economic Surveys, 31*(1), 169–189. https://doi.org/10.1111/joes.12129

Dietz, B. E., Carrozza, M., & Ritchey, P. N. (2003). Does financial self-efficacy explain gender differences in retirement saving strategies? *Journal of Women and Aging, 15*(4), 83–96. https://doi.org/10.1300/J074v15n04_07

Duraichamy, J., & Ponraj, P. (2021). An economic study on financial literacy among working women in Madurai city. *Shanlax International Journal of Economics, 9*(2), 73–76. https://doi.org/10.34293/economics.v9i2.3789

Dyson, R., & Renk, K. (2006). Freshmen adaptation to university life: Depressive symptoms, stress, and coping. *Journal of Clinical Psychology, 62*(10), 1231–1244. https://doi.org/10.1002/jclp.20295

Farrell, L., Fry, T. R. L., & Risse, L. (2016). The significance of financial self-efficacy in explaining women's personal finance behaviour. *Journal of Economic Psychology, 54*, 85–99. https://doi.org/10.1016/j.joep.2015.07.001

Fernandes, D., Lynch, J. G., & Netemeyer, R. G. (2014). Financial literacy, financial education, and downstream financial behaviors. *Management Science, 60*(8), 1861–1883. https://doi.org/10.1287/mnsc.2013.1849

Fonseca, R., Mullen, K. J., Zamarro, G., & Zissimopoulos, J. (2012). What explains the gender gap in financial literacy? The role of household decision making. *Journal of Consumer Affairs, 46*(1), 90–106. https://doi.org/10.1111/j.1745-6606.2011.01221.x

Fosnacht, K., & Calderone, S. M. (2017). Undergraduate financial stress, financial self-efficacy, and major choice: A multi-institutional study. *Journal of Financial Therapy, 8*(1), 107–123. https://doi.org/10.4148/1944-9771.1129

Goldman, N., Turra, C. M., Rosero-Bixby, L., Weir, D., & Crimmins, E. (2011). Do biological measures mediate the relationship between education and health: A comparative study. *Social Science and Medicine, 72*(2), 307–315. https://doi.org/10.1016/j.socscimed.2010.11.004

Gonçalves, V. N., Ponchio, M. C., & Basílio, R. G. (2021). Women's financial well-being: A systematic literature review and directions for future research [Special issue]. *International Journal of Consumer Studies, 45*(4), 824–843. https://doi.org/10.1111/ijcs.12673

Hasler, A., & Lusardi, A. (2017). The gender gap in financial literacy: A global perspective. In *Global Financial Literacy Excellence Centre*. https://gflec.org/wp-content/uploads/2017/07/The-Gender-Gap-in-Financial-Literacy-A-Global-Perspective-Report.pdf

Hati, S. R. H., & Wibowo, S. S. (2017). Exploring the motivation toward and perceived usefulness of a financial education: Program offered to low-income women in Indonesia. *ASEAN Journal of Community Engagement, 1*(1), 17–28. https://doi.org/10.7454/ajce.v1i1.57

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science, 43*(1), 115–135. https://doi.org/10.1007/s11747-014-0403-8

Hsu, Y.-L., Chen, H.-L., Huang, P.-K., & Lin, W.-Y. (2021). Does financial literacy mitigate gender differences in investment behavioral bias? *Finance Research Letters, 41*, Article 101789. https://doi.org/10.1016/j.frl.2020.101789

Islam, M. B., Hossain, M. N., Nayeem, A. R., & Akter, M. N. (2020). Effect of financial entrepreneurship and literacy program on women empowerment: A case study in Khulna District. *International Journal of Scientific & Technology Research, 9*(6), 803–810. https://www.ijstr.org/final-print/jun2020/Effect-Of-Financial-Entrepreneurship-And-Literacy-Program-On-Women-Empowerment-A-Case-Study-In-Khulna-District.pdf

Kabeer, N. (1999). *The conditions and consequences of choice: Reflections on the measurement of women's empowerment* (UNRISD Discussion Paper No. 108). United Nations Research Institute for Social Development (UNRISD). https://www.files.ethz.ch/isn/28994/dp108.pdf

Kadoya, Y., & Khan, M. S. R. (2020). What determines financial literacy in Japan? *Journal of Pension Economics and Finance, 19*(3), 353–371. https://doi.org/10.1017/S1474747218000379

Karakurum-Ozdemir, K., Kokkizil, M., & Uysal, G. (2019). Financial literacy in developing countries. *Social Indicators Research, 143*(1), 325–353. https://doi.org/10.1007/s11205-018-1952-x

Kaur, D., & Sawhney, H. K. (2025). Insights on women's financial literacy: A bibliometric analysis. *Prajnan: Journal of Banking and Financial Management, 54*(1), 57–77. https://doi.org/10.1177/09708448251370429

Khan, F., Siddiqui, M. A., & Imtiaz, S. (2022). Role of financial literacy in achieving financial inclusion: A review, synthesis and research agenda. *Cogent Business and Management, 9*(1), Article 2034236. https://doi.org/10.1080/23311975.2022.2034236

Khoirunnisaa, J., & Johan, I. R. (2020). The effects of financial literacy and self-control towards financial behavior among high school students in Bogor. *Journal of Consumer Sciences, 5*(2), 73–86. https://doi.org/10.29244/jcs.5.2.73-86

Kumari, D. A. T. (2020). The impact of financial literacy on investment decisions: With special reference to undergraduates in Western Province, Sri Lanka. *Asian Journal of Contemporary Education, 4*(2), 110–126. https://doi.org/10.18488/journal.137.2020.42.110.126

Lin, T., Fu, X., Chen, F., & Li, L. (2022). Correction to: A novel approach for code smells detection based on deep learning. In B. Chen & X. Huang (Eds.), *Applied cryptography in computer and communications. AC3 2021. Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering* (Vol. 386, pp. 171–174). Springer. https://doi.org/10.1007/978-3-030-80851-8_16

Lusardi, A. (2019). Financial literacy and the need for financial education: Evidence and implications. *Swiss Journal of Economics and Statistics, 155*(1), 1–8. https://doi.org/10.1186/s41937-019-0027-5

Lusardi, A., & Mitchell, O. S. (2007). Financial literacy and retirement preparedness: Evidence and implications for financial education. *Business Economics, 42*(1), 35–44. https://doi.org/10.2145/20070104

Lusardi, A., & Mitchell, O. S. (2008). Planning and financial literacy: How do women fare? *American Economic Review, 98*(2), 413–417. https://doi.org/10.1257/aer.98.2.413

Lusardi, A., & Mitchell, O. S. (2014). The economic importance of financial literacy: Theory and evidence. *Journal of Economic Literature, 52*(1), 5–44. https://doi.org/10.1257/jel.52.1.5

Lusardi, A., & Mitchell, O. S. (2022). *Financial literacy and planning: Implications for retirement wellbeing* (NBER Working Paper No. 17078). National Bureau of Economic Research (NBER). https://www.nber.org/papers/w17078

Mahdzan, N. S., & Tabiani, S. (2013). The impact of financial literacy on individual saving: An exploratory study in the Malaysian context. *Transformations in Business and Economics, 12*(1), 41–55. https://www.transformations.knf.vu.lt/28/se28.pdf

OECD/INFE (Organisation for Economic Co-operation and Development International Network on Financial Education). (2016). *Core competencies framework on financial literacy for adults* (Issue July). OECD/INFE. https://www.gpfi.org/sites/default/files/documents/Core-Competencies-Framework-Adults.pdf

OECD/INFE. (2023). *International survey of adult financial literacy*. OECD/INFE. https://www.oecd.org/en/publications/oecd-infe-2023-international-survey-of-adult-financial-literacy_56003a32-en.html

Okamoto, S., & Komamura, K. (2021). Age, gender, and financial literacy in Japan. *PLoS ONE, 16*(11), Article 0259393. https://doi.org/10.1371/journal.pone.0259393

Park, C. M., Kraus, A. D., Dai, Y., Fantry, C., Block, T., Kelder, B., Howard, K. A. S., & Solberg, V. S. H. (2021). Empowering women in finance through developing girls' financial literacy skills in the United States. *Behavioral Sciences, 11*(12), Article 176. https://doi.org/10.3390/bs11120176

Patnaik, B., Patnaik, D., & Pradhan, B. B. (2024). Women's financial literacy and financial inclusion post-pandemic. In N. Mansour, S. Baral, & V. Garg (Eds.), *E-financial strategies for advancing sustainable development: Fostering financial inclusion and alleviating poverty* (pp. 267–280). Springer. https://doi.org/10.1007/978-3-031-67523-2_16

Perry, V. G., & Morris, M. D. (2006). Who is in control? The role of self-perception, knowledge, and income in explaining consumer financial behavior. *Journal of Consumer Affairs, 39*(2), 299–313. https://doi.org/10.1111/j.1745-6606.2005.00016.x

Philippas, N. D., & Avdoulas, C. (2020). Financial literacy and financial well-being among generation-Z university students: Evidence from Greece. *The European Journal of Finance, 26*(4–5), 360–381. https://doi.org/10.1080/1351847X.2019.1701512

Pinto, M. B., Parente, D. H., & Mansfield, P. M. (2005). Information learned from socialization agents: Its relationship to credit card use. *Family and Consumer Sciences Research Journal, 33*(4), 357–367. https://doi.org/10.1177/1077727X04274113

Preston, A., & Wright, R. E. (2023). Gender, financial literacy and pension savings*. *Economic Record, 99*(324), 58–83. https://doi.org/10.1111/1475-4932.12708

Rahman, M. R., & Rahman, M. M. (2023). Impact of digital financial services on customers' choice of financial institutions: A modified UTAUT study in Bangladesh. *International Journal of Safety and Security Engineering, 13*(3), 409–421. https://doi.org/10.18280/ijsse.130304

Rushi, Z. (2022). Financial literacy among women in India: A review. *Neuro Quantology, 20*(13), 2398–2404. https://www.neuroquantology.com/open-access/FINANCIAL+LITERACY+AMONG+WOMEN+IN+INDIA%253A+A+REVIEW_10275/?download=true

Saeed, A., Sameer, M., Raziq, M. M., Salman, A., & Hammoudeh, S. (2019). Board gender diversity and organizational determinants: Empirical evidence from a major developing country. *Emerging Markets Finance and Trade, 55*(8), 1803–1820. https://doi.org/10.1080/1540496X.2018.1496421

Showkat, M., Nagina, R., Baba, M. A., & Yahya, A. T. (2025). The impact of financial literacy on women's economic empowerment: Exploring the mediating role of digital financial services. *Cogent Economics and Finance, 13*(1), Article 2440444. https://doi.org/10.1080/23322039.2024.2440444

Sun, S., Chen, Y.-C., Ansong, D., Huang, J., & Sherraden, M. S. (2022). Household financial capability and economic hardship: An empirical examination of the financial capability framework. *Journal of Family and Economic Issues, 43*(4), 716–729. https://doi.org/10.1007/s10834-022-09816-5

Tilak, P., Murgai, A., Harchekar, J. S. (2023). A study on working Indian women's financial literacy. *European Chemical Bulletin, 12*(13), 478–489. https://www.researchgate.net/publication/373366737_A_Study_on_Working_Indian_Women's_Financial_Literacy

Yeyouomo, A. K., Asongu, S. A., & Agyemang-Mintah, P. (2023). Fintechs and the financial inclusion gender gap in Sub-Saharan African countries. *Women's Studies International Forum, 97*, Article 102695. https://doi.org/10.1016/j.wsif.2023.102695

Zahera, S. A., & Bansal, R. (2018). Do investors exhibit behavioral biases in investment decision making? A systematic review. *Qualitative Research in Financial Markets, 10*(2), 210–251. https://doi.org/10.1108/QRFM-04-2017-0028

Zahera, S. A., & Bansal, R. (2019). A study of prominence for disposition effect: A systematic review. *Qualitative Research in Financial Markets, 11*(1), 2–21. https://doi.org/10.1108/QRFM-07-2018-0081