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Original Researcher Article

The Evolution of Financial Literacy and Risk Tolerance Across Life Stages and Their Combined Influence on Retirement Planning and Long-Term Investment Behaviour

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ABSTRACT

Based on the above objective this literature review will be exhaustive, (in terms of causes, effects, and the great role of financial literacy on the individual investment choice). It's about how the financial knowledge, attitude and behavior can impact individual portfolio selection and elimination of behavioral biases.A discussion brings the practical evidence together in that it is proposed that financial planning with time, risk diversification and risk evaluation are all related to a greater burden of financial literacy. The link between this skill and the active and participative involvement of an individual in the investment procedures is the applicability of financial expertise created how investors act. Moreover, because financial literacy enables investors to adjust their plans, when conditions in the financial market change, financial literacy is important to allow them to make rational and thoughtful decisions. This is important as study evidence has shown that being financially literate can minimize the impact of mental and behavioral biases on financial decisions, including heuristics and emotions on decisions. More importantly, the more knowledgeable and aware of money matters, the less herd mentality and cognitive bias, the more the rational investment decision will be. People can make better judgments regarding investments and avoid undesirable consequences that are normally caused by lack of knowledge or shortcuts in the mind since they have a greater grasp of financial concepts. Consequently, heightened understanding of money might provide the individuals with better understanding of complex financial products and this may help them to make optimum money lending, saving and investment decisions. To achieve the very best from their budget, and deal with the intricacy of the today's economic markets, persons need to have a very good understanding of these markets. Given this reason, a short literature survey of the knowledge regarding influence of influencing factors on financial literacy such as income, education and financial experience was provided in this paper. It also explores the role financial literacy will play in future investments as a linking variable between these experience and demographic attributes and the investment returns.

cial education programmes emerge from this synthesis and are based on demographic weaknesses that enrichment of the investor's behaviour, then the greater importance of such programmes becomes nt. By doing this, rebalancing of investments and managing risks from asset allocation and asset value lified. It will not only bring more rational decisions to individuals but also the financial literacy will aid nomy to stay stable as investors will not be blind and more resilient. For this reason, this review will all available literature, that will examine the methodologies used, to better show some of the existing well as some potential future research to study the level of financial literacy and its impacts. This study ore specifically investigate the interaction between financial literacy and the market efficiency and the aship between biases induced by these "rules of thumb" and policies of investment practices. There will gogical implications of the results gathered by the review and suggestions of how the behavioral finance may be applied to financial literacy learning will be provided as well as reviewing the influence of risk ion, financial literacy and overconfidence on one another and analyzing how investors follow the crowd. al knowledge is one of the most important components to your smart financial decisions, which will ou to create and keep your wealth. This systematic review highlights the financial literacy relevance in of new and complex financial markets. It tries to synthesize the knowledge by answering the question mpact of financial literacy on investing particularly focused on soft factors like behavioural biases oural finance) such as herding and overconfidence.

Keywords: The phrases financial literacy, investment decision-making, portfolio selection, behavioral biases, overconfidence, herding behavior, risk perception, financial education, investor behavior, and behavioral finance

INTRODUCTION

Financial literacy is the skill of understanding and using numerous financial abilities like budgeting, investing and debt management. It has developed into a new field of study to a research tool that is critical in shaping the world economy and individuals investors. As financial markets become more complex, the ability to construct an investment plan that is good depends so much on how well one understands money and how intelligent people are. As a result of this increased sophistication and rapid advancement in financial technology, financial literacy has become important to a world population that is growing increasingly exposed to financial services. This mere fact not only helps people to cope with the complicated financial cases, but also helps individuals feel belonging to the society and do well in the financial sphere by allowing them to make a good decision regarding money at different phases in their lives. High levels of financial literacy have been greatly connected to sensible approaches to money management comprised of saving money early in retirement, making risk assessments, and saving money in a disciplined way. It is this deep knowledge that enables people to adapt to the new market so readily, to capitalize on their investments as the economy shifts This is the knowledge they need, so they can actually reduce the financial risks they would otherwise face, make smart financial decisions, and end up making more money. Fiscal literacy can result in sound investment decisions, as it educates the investor on the management of their finances and the investor is not tempted to make hasty decisions and take actions merely due to the lack of information. Additionally, financial literacy is essential to avoid scams, sound money management, and to find long-term financial security, particularly in the face of the worldwide transition to personal retirement plans and the growing complexity of financial instruments including online transactions and digital currency. This need is also reinforced by the fact that the levels of financial literacy world over especially in economically developed countries with strong financial markets is low. Financial literacy is a key indicator of economic successfulness and agency in a fast-moving technological and economically intricate world, and is not only cognitively determined but also behavioural, digital and ethical. Thus, individuals ought to be informed about money, and certain educational issues must be prepared to help them make a sound choice especially now that healthcare and student loan debt are on the rise. This learning requirement is further compounded by the fact that research has shown that financially more enlightened people are more likely to understand financial complex instruments and they are more likely to participate in retirement planning. This idea stresses on the importance of being financially literate to be financially competent and by extension changes the way people behave with money and what they do with their money and as a result makes people better off financially. This is not just about being familiar with basic financial terms, but also being in a position to handle your own finances This can equip one with the capability to deal with different types of money, to comprehend financial markets and to draw both short-term and long-term financial plans. All that makes people more financially stable and the economy, in general. To have a comprehensive understanding of the concept, it is essential to consider the issues influencing the level of financial literacy including cognitive skills, socioeconomic conditions, and the availability of learning materials. All these assist in formation of financial literacy of an individual. Besides, the study of the impact of financial literacy implications clearly demonstrates that it can seriously influence both the economic well-being of individuals and the society. Such effects are better retirement planning and better guard against financial fraud, and better ways of generating money. This review will present summary of the academic literature on the determinants and impacts of financial literacy in order to describe its multifaceted contribution to the economy. Specifically, this paper will look at the interaction between financial literacy and choice of investments. It shows how decision-making with information is essential in the area of risk management and portfolios.

The review of the literature is carried out by using PRISMA protocol to review the works published over the last 20 years. The Scopius and Web of science databases and the assistance of keywords, including Financial Literacy and Investment Decision, enabled the key results to be discovered. It reviews itself of 44 valid meta-analytic approaches of 44 valid studies and bibliometric mapping of more than 2,100 articles to appreciate a multi-dimensional approach to the field. This two-sided method of research gives the opportunity to create a proper discussion of current trends and research gaps, as well as to gain a profound insight into the way financial literacy influences the investment behaviour and financial outcomes. The systematic review will elaborate on the synthesis of the existing scholarly evidence on the determinants and impacts of financial literacy and present a multidimensional perspective of the contributions that financial literacy has on the economic environment in the modern context. It particularly tries to incorporate both the unsystematic theoretical arguments and empirical information that guides the relationship between the level of financial literacy of a person and his or her propensities to make sound investment choices. This will entail an evaluation of how other demographic, and socioeconomic factors can be put into use to affect the financial literacy and hence investment decision-making. It is also true that those individuals who are less financially literate will be less competitive (financially) and predisposed to making wrong financial decisions). It may too have negative economic effects, such as being vulnerable to fraud and non-optimal portfolio performance. It is important to incorporate financial literacy and investment decision process and especially with regard to risk attitude which would result in wise decision making amongst the individual people. This also portrays the importance of critical action taken in the regulatory interventions in the educational intervention that not only inculcates some financial knowledge, but also good financial habits and sentiments. An example is that studies have shown that the higher the financial literacy level, the higher the investment performance, risk management and retirement planning. Conversely, failure to have basic financial literacy has a deteriorating impact on the quality of the individual to manage the day-to-day finances and saving towards the long-term objectives thereby putting a hold on the economic welfare and development in the society. The attendant failures could end up in ineffective decision making, particularly in the financial markets which are complicated and demand a fine sense on financial instruments and risk control. This underscores the significance of built-in turnkey financial literacy interventions during the delivery of the skills required to negotiate the intricate worlds of finance and achieve long-term financial stability. This holistic approach demands examination of how the psychological factors and cognitive biases influence the application of financial behaviors, and enables the prospects of optimizing financial literacy teaching. Additional understanding of these effects can lead to more particularized and efficient methods to financial education, particularly to reduce socialeconomic populations or those with less prior financial knowledge. This particularly applies given that financially less literate individuals will make irrational investment decisions, which will result in under-diversified portfolios and greater debt, respectively. The provided weakness often leads to personal severe losses and a portion of the general financial instabilities, which is why the financial education programs should be offered to a large scale as a priority. The role of inculcating behavioral economics have received wider acceptance as a potent source of boosting financial resilience and improving individual financial individuality In this sense, the implementation of behavioral economics concepts in financial literacy programs has received wider acknowledgement as an effective way of enhancing the capacity to make financial decisions and ameliorate responsible financial conduct. This is a rather delicately packaged intervention that might assist individuals in defining and reducing the impact of their personal bias and make more rational and positive decisions concerning their financial decisions. It is especially applicable to vulnerable communities, including rural population, women, informal workers, migrants and refugees, with whom the financial literacy level is changing, in terms of social inclusion and economic security, in a disproportionate way. These efforts are at the center of removing the systematic biases that tend to shape how investors act and leads to them to take excessive risk and invest money unreasonably. This inter-disciplinary view, acknowledging the complexity of financial decision-making and the importance of psychological elements in economic behaviours is critical in enhancing the efficiency and scope of financial literacy interventions). With the identification of the psychological compromises of overconfidence, loss aversion, and herding, behavioral finance will give the solution to forecast and correct the misoptimal investing behavior and this has led to the significance of specially designed financial literacy programs These programs will help people identify and address the influences of cognitive illusions and frame. This integration also allows developing interventions that can counter some heuristics that lead to suboptimal financial implications, such as those observed in under-saving or over-borrowing. Such initiatives can bridge the knowledge-practice gap and design flexible and successful financial literacy education strategies. Between the impacts of behavioral biases on financial behavior, such as anchoring, herding and loss aversion, learning about their effects enables educational practitioners to institutionalize classes that directly explore these cognitive traps and in so doing enable individuals to make superior and more independent financial decisions. This perspective shows the relevance of financial literacy to lessen the susceptibility to behavioral biases and maximize financial well-being. This paper reviews peer-reviewed papers published in 2001-2023 and conducted a systematic review and bibliometric analysis. In order to ensure that we had an overall view of the literature, we combined data in huge databases such as Web of Science, Scopus and Taylor and Francis, with PRISMA protocol. This has enabled one to form the broad themes, trends in methods, gaps in our knowledge about financial literacy, financial confidence and how this influences economic behavior. The central aim of the review was to locate studies that specifically differentiate between the objective and subjective financial information and to discuss the impact of one or another on financial decisions and their financial well-being in general. The synthesis will clarify how these attributes will interrelate in multifaceted ways, specifically, variations in financial self-efficacy and financial literacy support will be converted into disparate financial performances and choices in decision making.Such mode of analysis also involved studies of psychological traits such as self-efficacy and conscientiousness that have been decided to have a major bestowal in financial attitude and performance which at times even surpass awareness of money itself. The systematic review did discover the impact of the external information on the financial decision and how this can depend on other factors such as gender. Significantly, other researches have shown that women are generally over-confident when it comes to financial capabilities compared with men. This disparity can largely be attributed to the fact that women are less financially-literate as compared to men. There is some evidence that women are able to be the overconfident gender, but there is some evidence that males tend to be overconfident, in areas typically believed to be masculine strength, such as math, and finance.Such male and female overconfidence differences and the fact that the majority of high-performing women also think they are impostors testify to the need to consider both the gender and level of education when analyzing the impact of self-confidence on financial choices and financial performance. This shows how important it is to have tailored financial education programs which not only increase objective financial literacy but also makes sure that the degree of subjective confidence is in place at the right place among different demographic strata. This demands further articulation of these disparities in cultural orientation and socio economic aspects, particularly given the fact that women are not as financially shrewd as men. This disparity, and the differences of men and women in terms of financial confidence and overconfidence imply that there is complex interdependence of knowledge, self-perception, and financial behavior. This awareness of such complicated relationships is useful in formulating individualized financial interventions that can be directed to such psychological variables as self-efficacy and resilience. This will enhance economic well-being, as well as eliminate gender-based vulnerabilities. Additionally, in order to calculate financial education plan that will allow individuals to study objectively and correctly evaluate them we must examine the social and psychological causes that make them different. This will translate to fair fiscal outcomes.

3. IMPACT OF FINANCIAL LITERACY ON INVESTMENT DECISIONS

3.1 Positive Influence on Portfolio Choice

The notion that financial literacy can positively affect investment decisions among various demographic groups has been supported by a plethora of studies. An example: Regional Impact: FL scores are positively related to informed investment decisions and overcoming market complexities in Saudi Arabia and Pakistan. Market Timing: High-literacy investors have better market timing; it has been proved that high literacy investors leave the stock market more before it crashes as compared to when it crashes. Breadth of Investment: In China, the progress made in FL substantially increases the type of risky financial investments that households would consider.This demonstrates that financial literacy is a moderating variable that enables investors to be aware and surmount the intuitive bias, thus achieving more rational and informed investor conduct. Financial literacy and behavioral biases are closely related and intertwined as when a person is more financially literate, he/she will be more empowered to identify their predispositions as well as avoid them and make more rational and objective financial decisions. Specifically, effective financial literacy is associated with a smaller impact of the overconfidence bias and the enhanced capacity to reach a sound investment choice. Studies have proved that financially literate individuals are better positioned to get over the heuristic traps of representativeness and anchoring in to make more prudent investments. This means that financial education may play a noteworthy role in aiding rational decision-making by enhancing the capabilities of an investor to critically interpret and avert a majority of the cognitive traps. Its financial literacy has also been identified to mediate the relationship between behavioral irrationalities and investment decisions, thereby helping investors to avoid the fallacy of irrationality. Specifically, financial literacy has been enhanced to minimize the influence of optimism, fallacy of gamblers and the availability biases on making investment decisions. This moderation effect demonstrates that financially literate individuals have a higher chance of the ability to mitigate the negative effect of cognitive biases on the investment outcomes. Empirical research on the other hand indicates that the moderating effect of emotions and market dynamics on investment behaviour, despite the fact that the moderating role of financial literacy could be significant and greatly tamed by financial literacy, the moderating effect on investment biases such as herding, heuristic-based decision-making and prospect theory factors might not always be statistically significant. Yet, all of the evidence appears to point towards the belief that one factor that predisposes more rational investing behavior is financial literacy, as it makes the person less susceptible to various cognitive biases. One such example is that the level of financial literacy is also negatively correlated with overconfidence, risk aversion, and representativeness bias, i.e., the higher the level of financial literacy, the lower the levels of these behavioral tendencies are and less they impact individuals.This means rational decision making can be well enhanced by the use of education interventions, which equip them with the mental machinery that they require in order to critically evaluate investment opportunities, and avoid most of the psychological traps. Also, financial literacy is known to moderate any negative effects of regret aversion bias and information cascade bias on investment decisions to enable the investor make superior investment decisions. This shows why to consider financial education one of the instruments to help investors make a more reasonable decision and decrease the effects of cognition and emotional bias. Financial literacy may also mediate the influences of anchoring and loss aversion on decision-making in investment by promoting a more realistic consideration of the potential returns and risks. The role of financial literacy in mediating the relationship between heuristic-based biases and investment management behaviors, and market efficiency, is a valuable topic on the agenda of subsequent research especially concerning its indirect effect of decision making. This opens up the potential of conducting additional research on the ways the financial literacy interventions may be customized to have a direct effect and reduce the impact of cognitive biases and emotional responses on the financial behavior, and therefore, lead to more solid and healthy investment policies. Also, recent research has indicated that the financial literacy effects of investment decisions require exploration, implying that the mediation of such effects by associations between risk perception and fundamental or technical anomalies, and the mediation of such effects by the financial literacy itself should be investigated. Specifically, having a high financial literacy will aid in making a more nuanced assessment of risk, as a higher financial literacy level will enable the investors to draw a difference between their perceived and actual market volatility and hence, prevent unfounded fear or over-optimism. It means that financial education courses are significant in teaching people mental mechanisms to make more rational and less emotionally-based investment decision-making processes. Such an improved understanding of the relationship between financial literacy and investment decisions is critical in developing certain intervention capable of improving financial welfare and market efficiency. In addition, the effectiveness of such interventions can be enhanced by considering other biases related to behavior such as order of alphabet and memory of names, which have not been much discussed in existing literature). It can also be a topic of a later study to examine the mediating role of financial literacy between overconfidence and investment decision making, to give a more nuanced view of the complex interaction between overconfidence and low financial literacy in promoting herding behaviour and exploiting partial principles of decision making It is also relevant because, when combined with poor financial literacy, overconfidence may lead to poor investment policies due to being encouraged to herd and follow superf

3.2Mitigation of Behavioral Biases

Financial literacy is one of the major processes that can be utilized to alleviate cognitive illusions and judgment errors. Bias Reduction: FL helps investors to overcome mental bias, groupthink and errors of self-attribution. Ambiguate aversion: Educating individuals about the principles of finance may help them feel more comfortable about things and can also cause them to invest in things they feel are complex. Moderating Facts: Overconfidence could moderate the association between FL and decision making: the two could also be effective in investments, although the overconfidence bias could not wander with no check, since FL could equip overconfident decision-makers with factual knowledge.It implies that not only the propagation of objective information but also the problem of developing metacognitive awareness of personal biases should be prioritized in financial education to promote less irrational financial behavior.The integrative approach to relating factual financial prowess, with behavioral economics skills, is essential to the issues of the contemporary financial markets, where cognitive biases can greatly mislead investors to make irrational rather than rational decisions. It explains the significance of programs which can not only improve objective financial literacy, but also the extreme level of subjective financial literacy and possible overconfidence about financial outcomes. Research indicates that individuals with financial literacy overconfidence, also referred to as financial literacy overconfidence, are less involved in important financial behaviors, such as retirement, investment, and saving in case of an emergency regardless of their greater financial satisfaction. This difference between the perceived financial literacy of people in the country and their actual knowledge may lead to unsound decisions. It is especially true as those with lower objective financial literacy would be inclined to think that they know more than they do, similar to the DunningKruger effect. Consequently, means of improving the accuracy of self-judgment, particularly of less financially literate persons, should be also part of the vast financial literacy programs to mitigate the adverse impacts of overestimation on financial decisions. Conversely, the less confident may also have a poor financial outcome since they do not bother to develop a financial plan, or even engage the qualified advisors. The above nuanced revelation justifies the necessity to evolve practical and balanced assessment of financial capabilities and talents, and appreciate that being excessively confident or underconfident is unhealthy in managing finance appropriately and making sub-optimal choices. This entails customized training policies to approach these varying self-evaluation patterns to encourage healthy financial practices and an improved financial health over time. The comprehensive education should not only be concerned with the amplifying of objectively financial information, but also to expound the metacognition of individuals in such a way that it fosters the assessment of their comprehension in a more adaptive way, thereby contributing to more adaptive financial behaviors. The particular goal of programs ought to be to correspond subjective scores of financial literacy and factual knowledge, particularly with those who have poor measured financial literacy yet tend to regard themselves as highly knowledgeable having a lower likelihood of desiring additional financial education. Such reevaluation of the self-image plays a critical role in the realization of real financial empowerment since a proper realization of the limitations can result in active activity with financial guidance and further education. Apparently, overconfident people regarding their financial literacy, though they might be unknowledgeable about it, grow to be even more contented about their finance. However, this may cover the reality that they do not actually know their financials.

3.3Antecedents and Mediators

The literature identifies different factors which determine FL levels and how it works:Factors that determine the financial literacy of a person are their level of education, their household income and their money attitude.Fintech as a (Mediation Intermediate): Fintech usage is viewed as an intermediate; the more financially independent you are, the higher the chances of using fintech tools, and thus, the greater the risky and better-organized financial investments.Financial Well-Being: One of the areas, which influence the correlation between FL and long-term financial well-being, is the investment decision-making behavior, including paying off debt on time and stock ownership.Besides these immediate effects, the association between financial literacy and confidence and socioeconomic traits needs further examination of the psychological factors influencing the way individuals make financial-related choices. In particular, the impact of overconfidence in financial literacy when what an individual believes to know is not always the same as what they actually know should be carefully considered since it can have a significant impact on financial stability and decision-making of an individual. Such a disparity, in which subjective financial literacy may not be comparable to objective financial literacy, could have a behavioral impact, with SFL usually being more directly linked to fintech adoption than OFL This complex relationship illustrates how essential it is to consider both objective and subjective financial literacy to understand financial competence and confidence fully. In addition, the psychological process of overconfidence indicates that individuals who have a high degree of confidence in their skills, even though they are not necessarily that skillful, could also view a financial crisis as a chance rather than a threat. This would enhance their economic conditions as well as their health. This view argues that interventions aimed at developing a healthy degree of financial confidence, instead of merely objective knowledge, might be highly critical in promoting good financial decision-making practices such as the willingness to invest in risky assets and the willingness to invest in equity markets. However, it is that positive influence of confidence that must be offset by the reality that being overconfident can cause people to make poor decisions, particularly because individuals may think they know much about money than actually they are aware of. Therefore, further studies are supposed to balance the two parameters-financial confidence and objective literacy in bid to develop robust frameworks on which to draw financial judgments. This is why we should understand more about psychological factors that precondition people to make financial decisions and take financial risks, such as their beliefs in financial literacy. Such programs may take advantage of research that demonstrates the impact of personality traits and financial literacy on investment choices of people . This would enable them customize the educational content to the particular psychological aspects and behavioral biases influencing the financial decisions of people. An example of this is that being overly confident in your financial literacy, i.e. having a subjective and objective gap in financial literacy, has been linked to increased participation of persons in the stock market. This demonstrates that overconfidence might cause individuals to engage in activities that might be beneficial to their financial aspect yet it is also rather risky as long as they lack a solid knowledge of the functioning of money. Further studies reveal that this overconfidence, particularly of men, can see them become even richer, but in the case of women; the advantage is often minimal. This demonstrates that men and women decide on the financial front and get rich differently.

4. RESEARCH GAP

Behavioral Biases as Mediators and Moderators

Although a few studies have recognised the influence of behavioural aspects (overconfidence, herding, disposition effect etc.) in investment decisions, few empirical research efforts have been undertaken that investigate the complex mediation and moderation effects between behavioural biases and financial literacy and their ability to predict investment behaviour across various audiences and situations. In order to better understand these dynamics, more nuanced, longitudinal and cross-cultural studies are needed.

Financial Literacy: In underrepresented regions and populations

Most research studies concentrate on emerging markets such as those in India, Indonesia, Saudi Arabia and Nepal, but less on the underdeveloped or low-income regions (in Sub-Saharan Africa excluding Ghana and DRC, rural populations, marginalised groups). Sometimes, the knowledge gap is in adapting financial literacy interventions to these contexts and implementing them effectively taking into account social-economic and cultural considerations.Financial Literacy and Sustainable and ethical investment decisions.While a few studies mention sustainable investment behaviour and ESG factors, there is a lack of investigation on financial literacy in relation to making decisions towards sustainable investment. Research may focus on analysing the role of financial literacy in material financialization or could explore if financial literacy programs can encourage sustainable finance or if green or ethical finance products promote financial literacy.The importance of technology and fintech in financial literacy and making investment choices.

Empirical studies on the impact of digital financial instruments, financial technology and online financial education on financial literacy and investment decisions are relatively scarce, particularly when focused on the digital younger generation. A better understanding of the increasing role of technology in reducing literacy gaps and its influence on investment decisions should be developed.A Presentation by the Financial Planning Association of Greater St. Louis

Retirement planning is covered, but there are no larger, more long-term studies following the “lives” of financial literacy and their effect on retirement preparation going from job to job, growing older, and facing health shocks.Gender of financial literacy and investment behaviors.

Although some research points to a gender divide in financial literacy and investment decision-making, there is limited research examining the barriers, motivators and educational interventions specific to the gender divide – in particular in non-Western environments.

5. RESEARCH QUESTION

What is the role of behavioral biases as mediation and moderation factors between financial literacy and investment decisions – and how?How does financial education influence the sustainable and ethical investing behaviour and how can financial education programmes be designed to incentivise green investing?What is the effect of fintech products and financial education materialization (through digital media) on financial literacy and financial investment behaviours in younger generations which are digitally active?What role do gender differentiated factors play in financial literacy and investment decision making and what are effective and targeted interventions in non-Western settings?What is the relationship between financial literacy and financial risk-taking attitudes of different age groups, and how do they influence the retirement planning and investment behavior of the elderly?

6. RESEARCH OBJECTIVE:

To probe the mechanisms of the influence of financial literacy on investment decisions in relation to behavioral biases in different cultural and demographic environments.To assess how financial literacy affects sustainable and ethical investment choices, and formulating specially designed financial education strategies that can effectively enhance green investment behavior.To gauge the impact of fintech tools and digital financial education upon digital financial literacy and investment practices of younger, digitally active groups.To understand FinLit gender gaps on the investment decision-related needs in non-Western settings, and to find gender-specific activities that can narrow them down.Investigate changes in financial literacy among individuals throughout various life phases and how financial literacy and risk tolerance integrate in investment practices and retirement planning.

7.RESEARCH HYPOTHESIS

Financial literacy is a strong mechanism and moderator of the link between financial literacy and investment decision-making; the effects also differ between cultural and demographic groups.More financial literacy positively affects sustainable and ethical investments and integrated financial education programs positively affect the green investment behavior of investors.Younger people with digital financial literacy means better investment behaviours and practices, with the help of fintech tools and digital financial education platforms.

Socio-economic factors related to gender are among the factors that affect financial literacy and investment decision making in non-Western environment and can be remedied with specific measures.Financial literacy and risk tolerance is a life cycle phenomenon, and it interacts with one another in shaping retirement behaviors and investments.

Hypothesis Statement

H2 Financial literacy – Investment decision making relationship is mediated and moderated by behavioral biases.

Financial literacy impact on sustainable and ethical investment behaviors and propagative effect of customized financial education on green investment behaviors.

H3 Fintech tools and financial education digital platform enhance the financial literacy and investment behavior of younger age groups who are digitally active.

H4 Gender-specific variables lead to gender differences in financial literacy and investment decision making in non-Western settings.

H5 Financial literacy and risk tolerance change over time and are interrelated in retirement decision making.

Table 2. Hypothesis-Wise Statistical Testing Plan

Hypothesis	Statistical Technique	Decision Rule
H1	Mediation and moderation regression / SEM with interaction term	Supported if behavioral bias coefficient and/or interaction term is statistically significant
H2	Multiple regression / SEM	Supported if financial literacy and tailored financial education positively and significantly affect sustainable investment
H3	Regression, mediation, and subgroup analysis by age group	Supported if fintech/digital literacy has significant positive effects, especially among younger groups
H4	Independent sample t-test, ANOVA, regression, or multi-group analysis	Supported if gender-specific factors significantly explain differences in financial literacy or investment decisions
H5	Multiple regression and ANOVA by age group	Supported if financial literacy, risk tolerance, and age group significantly influence retirement planning

8.RESEARCH DESIGN

8.1The calculation of population and sampling and sample size

The target population includes individual investors, potential investors, financially active adults, working individuals and financial or fintech users. The study highlights individuals exposed to saving and/or investment, financial planning, applications of household financial decision making, and/or fintech.

The dataset has a population of 400 respondents and this has been uploaded for analysis. This sample size is appropriate for regression, mediation/moderation analysis, subgroup analyses, ANOVA and structural equation modeling. In the sample, the type of respondent, inclusion or exclusion criteria, the geographic scope, the method of data collection, the response rate, and the ethical consent should be clearly described of the sample used in the paper of Q1.

8.2 Sampling Technique

Even though respondents may be drawn from across social classes, the study may opt for purposive sampling since the participants must have a minimum knowledge on financial decisions, savings, investment, financial tools and financial retirement. For the sake of external validity, an external balancing based on quotas should be done according to gender, age group, level of education, monthly earnings, cultural background, job status and experience in investment. In this way the study accounts both for the heterogeneity of financial behaviour and guarantees the meaningful representation across age groups and financial experience groups.

8.3 Data Collection Method

The method of data collection is structured questioners that used primary data. Demographic items and construct-related items of the questionnaire cover financial literacy, decision making in investments, behavioral biases, "sustainable and ethical investing behaviors", "tailored financial education", fintech/digital financial literacy, gender-specific factors, risk tolerance, and retirement planning. The responses to the constructs are scored on five point scale with 1 denoting Strongly Disagree and 5 denoting Strongly Agree.

The questionnaire method is appropriate since the study is investigating the following variables that can be captured conveniently using standardized survey items: psychological, behavioral, and perceptual. Each item on the questionnaire should be modified from an existing and validated prior study, especially for first level of reporting, and pretested prior to actual data gathering.

8.4Measurement of Variables

Financial literacy is regarded as the main independent variable of the study. Decision-making for investment, sustainable and ethical investment and retirement planning are emphasized as key dependent variables. Behavioral biases are explored as mediator and moderator. The explanatory, moderating, grouping and control variables are fintech/digital financial literacy, tailored financial education, gender-specific factors, gender, cultural background, age group, risk tolerance, income, education, employment status and investment experience.

The construct-level variables used in the uploaded analysis report are presented in Table 1.

Table 2. Construct-Level Variables Used in the Study

Construct	Dataset Variable	Role in the Study
Financial Literacy	Financial_Literacy	Main independent variable
Investment Decision-Making	Investment_Decision_Making	Dependent variable
Behavioral Biases	Behavioral_Biases	Mediator and moderator
Sustainable/Ethical Investment	Sustainable_Ethical_Investment	Dependent variable
Tailored Financial Education	Tailored_Financial_Education	Independent/explanatory variable
Fintech/Digital Financial Literacy	Fintech_Digital_Financial_Litera cy	Independent/explanatory variable
Gender-Specific Factors	Gender_Specific_Factors	Independent/explanatory variable
Risk Tolerance	Risk_Tolerance	Independent/explanatory variable
Retirement Planning	Retirement_Planning	Dependent variable

9. CONCEPTUAL FRAMEWORK

In the conceptual phase financial literacy is defined as the central predictor of investment related outcomes. The model also suggests that those who are financially literate tend to take informed investment decisions, and take part in sustainable and ethical investments and make effective use of fintech tools along with retirement planning. But there are behavioral biases that, along with gender-specific constraints, cultural background, digital financial literacy, risk tolerance, and differences between life stages for different age groups, can affect the relationship between financial literacy and outcomes.

The conceptual logic is envisioned to be as follows:

Financial literacy has direct impacts on the decision making of investment.

The financial literacy--investment decision making relationship is mediated and/or moderated by behavioral biases.

Financial education that is highly targeted and financial literacy are mutually related with the investment action that leads to sustainability and morality.

Effect of fintech/digital financial literacy on financial literacy and investment decision-making, and particularly for the younger, digital active respondents.

The gender-specific factors and gender difference on financial literacy and the investment decision making.

Financial literacy contributes, along with risk tolerance and age group, to the influence on retirement planning.

9.1 Econometric and Statistical Models

In the Direct Effect Model, the generalized null hypothesis is: Investment_Decision_Making = beta0, with beta1 = 0.With the Direct Effect Model, H1: Investment_Decision_Making = beta0 + beta1(Financial_Literacy) + error, where beta1 = 0 is the generalized null hypothesis.

H1: Mediation (Model): Behavioral_Biases = beta0 + beta1(Financial_Literacy) + error

Investment_Decision_Making depends on Financial_Literacy, Behavioral_Biases and beta0 and beta1 and beta2 are the estimated values.

H1: Moderation Model: Investment_Decision_Making = beta0 + beta1(Financial_Literacy) + beta2(Behavioral_Biases) + beta3(Financial_Literacy x Behavioral_Biases) + error

Sustainable Investor Model Sustainable_Ethical_Investment = beta0 + beta1(Financial_Literacy) + beta2(Tailored_Financial_Education) + error

Fintech and Digital literacy Models: Financial_Literacy = beta0 + beta1(Fintech_Digital_Financial_Literacy) + error

Investment Decision Making = Y = β0 + β1 Fintech_Digital Financial Literacy + error

Categorize factors specific to gender and test whether financial literacy differs with gender.Create a model that has a variable of financial literacy, a variable of type of gender factor, and a variable of gender and test for differences in financial literacy with gender.

Investment_Decision_Making = beta0 + beta1Gender_Specific_Factors) + beta2Gender) + error

H5: The model of retirement planning is represented by the following equation: Retirement_Planning = β0 + β1(Financial_Literacy) + β2(Risk_Tolerance) + β3(Age_Group) + error

9.2 Reliability and validity.

Cronbach's alpha and composite reliability will be used to determine reliability. Items will be considered to have acceptable internal consistency with Cronbach's alpha values of 0.70 or greater. The factor loadings and average variance extracted will be used to assess the convergent validity. Fornell-Larcker criterion and HTMT ratio will be used to test the discriminant validity. Variance inflation factor values will be used to analyse multicollinearity. Harman's single factor test should be considered for common method bias and for SEM, full collinearity VIF should be considered.

Table 3.. Cronbach's Alpha Interpretation

Cronbach's Alpha Value	Interpretation
>= 0.90	Excellent
0.80 - 0.89	Good
0.70 - 0.79	Acceptable
0.60 - 0.69	Questionable
< 0.60	Poor

10. DATA ANALYSIS STRATEGY

Data analysis will be done sequentially so as to be thorough, precise and ready to be published in a reputable journal. Data will first be screened for missing values, outliers, normality, response bias and multi-collinearity. Second, descriptive statistics will be presented for summarizing respondents' characteristics and construct-level scores. Thirdly, the reliability analysis will be done by Cronbach's alpha. Constructs that have an alpha of >0.70 will be kept for next alpha levels analyses. Fourth, direction and magnitude of relationships between the key constructs will be investigated through correlation. Fifth, regression analysis, mediation and moderation testing, ANOVA, and subgroup analysis will be used to test the five hypotheses.

The analysis needs to be done in more than just regression, for a Q1 paper submission. Preferable would be to employ both approaches of structural equation modelling (SEM), namely the covariance based SEM and the partial least square SEM depending on the distribution, theoretical maturity, and complexity of the model. The output of the measurement model must consist of the loadings of the factors, Cronbach's alpha, composite reliability, average variance extracted, discriminant validity and HTMT ratios. Path coefficients, t-values, p-values, confidence intervals, R-square, effect size, predictive relevance, mediation effects, moderation effects, robustness checks should be reported in the structural model.

11. FINDINGS

One of the key determinants of performance of investing is financial literacy. It also enables them to make superior decisions in such spheres as Saudi Arabia, Pakistan and China. Increased financial literacy is associated with increased market timing, more investments and reduced behavioural bias such as overconfidence, herd effect and framing effect. Gender and income are some of the graphic variables including psychological edits, which play a major role in determining the connection between FL and investing returns. Also, there are situations where trust in financial literacy could substitute financial literacy in facilitating participation in financial action such as in retirement planning, or stock market investment, particularly among specific groups. Or more specifically, among high educated males, perception of financial sophistication can more commonly be the decisive factor to join or not to join the market, as opposed to financial literacy per se. Nevertheless, full comprehension of the financial literacy comprises also comprehending that the vast majority of the population in particular women, minority groups and non college graduates is less financially literate. It demonstrates the need to concentrate on intervention opportunities that can enhance the financial literacy rates and confidence levels of these groups of the population, and thus the impacts of financial illiteracy on their future and financial safety. Moreover, the role of financial literacy initiatives stemming on institutions might be important in providing evidence-based intervention to the creation of optimum practices to restrain such inequalities. To give an example, it can be made to be educational using one-on-one interventions to make people think intelligently about their future finances, reducing information distortions and behavioral biases. This will need an intensive program which will facilitate personal training and enhanced long term support so that the individuals in the various classes will be in a position to become financially independent. In fact, an increased level of financial literacy correlates with increased returns to investments and wise financial decision-making. The reason behind this is that, highly knowledgeable individuals about money are inversely confident about risk management, when they allocate and save to the long-run. Conversely, lack of adequate information about money can set more of the individuals predisposed to behavioral biases, such as the herding behavior particularly when people are overly confident and have readily available tools of making decisions This is further complicated by the fact that, even with the translateability of financial literacy to better financial behavior, there may be interventions that can be offered to improve financial literacy but which may not necessarily translate to better financial behavior, at least This creates the need to showcase the educational concepts which not only provide financial education but also education in critical thinking and even thinking about the situational factors which the financial decisions have to visit. Social inclusion and reduction of inequalities: To live under complex financial circumstances and become solvent, financial literacy: the possibility to make the informed decision in the economic sector and produce funds is obligatory. In its turn, specific education programs that shine light on the connection between financial literacy rates and psychological variables, consequently, are also required to increase the financial capacities of families, particularly, the disadvantaged ones.

11.1 Methodical Implications

Financial literacy is one of the major factors influencing the performance of investing. It also assists individuals to make superior choices in such locations as Saudi Arabia, Pakistan and China. Better financial literacy is associated with better market timing, better investments and less behavioural bias of overconfidence, herd effect and the framing effect. Graphic characteristics, like as gender and income, along with psychological modifiers like risk tolerance, have a key role in determining the connection between FL and investing results. In addition, confidence in financial literacy can also at times replace financial literacy in promoting financial behaviour like retirement planning or stock market investment especially in certain groups. To be more exact, perceived financial sophistication may in most cases be a stronger predictor of whether or not high-educated male will participate in the market as compared to financial literacy. However, complete financial literacy also means being aware that most individuals, especially women, minorities, and those who are not college graduates are less financially literate. It also highlights the necessity to address interventions that can improve the financial literacy and confidence of these groups of the population and, therefore, the role of financial illiteracy in their financial stability and future planning.Moreover, financial literacy programs managed by institutions might prove helpful in providing evidence based action towards the emergence of best practices that would reduce such disparities. As an example, customized educational interventions might be effective in assisting individuals to make intelligent decisions regarding their financial futures by resolving information gaps and repairing the behavioral biases. Individual education and more systematic help is required in this comprehensive program to ensure that people of both the high social classes and lower classes are self-sufficient economically. As a matter of fact, it is true that the more, the better the financial literacy, the better the returns on investments and the better financial decisions made. This is due to the reason that, well-informed individuals are more likely to be in a position to handle risk, spend and save in the long run. Alternatively, the lack of information about money might predispose more individuals to behave based on behavioral biases, particularly when individuals are highly confident and willing to seek some effortless methods of making financial choices This is further complicated by the fact that, though financial literacy tend to relate to improved financial behaviors, interventions that can be employed to enhance financial literacy do not necessarily translate to improved financial behaviors, particularly in populations with low income levels. It suggests that mere provision of financial information might not be sufficient and the interventions ought to be aimed toward overcome the cognitive biases and socioeconomic barriers that hinder application of financial knowledge in making real-life decisions. This raises the necessity of educational concepts, which would not merely offer financial education, but also train the critical thinking skills and consider situational factors that can affect the choices related to finances. Social inclusion and alleviating inequality: In order to live in complex financial conditions and become stable, it is significant to be financially literate; the possibility to make knowledgeable decisions in the economic environment, and use resources. In turn, specific educational programs to emphasize the connection between financial literacy and the psychological variables would be required to promote the financial well-being of households, particularly the disadvantaged households.

11.2 Control Variables

Demographic and socioeconomic factors that could affect an investment decision need to be addressed. The suggested control variables include gender, age category, educational qualification, monthly income category, employment status, cultural group, how far the person has indulged in an investment activity, and primary mode of investment. Adding these controls will aid in determining the specific effect financial literacy, behavioral biases, fintech literacy, tailored education, gender-specific factors, and risk tolerance have on the dependent variables.

11.3 Ethical Considerations

The Study will adhere to ethical principles for research. The participation must be voluntary and with informed consent. Participants should be told what the study is for, why their participation is important to the study, that their responses will be kept confidential, and that they can drop out of the study at any time. The final research paper should NOT contain any personal information. These data should only be used for academic and research purposes.

11.4 The limitations of the research design.

The study is cross sectional so care should be taken in drawing inferences about causality. There could be social desirability bias, recall bias or overconfidence bias in this particular questionnaire because of self-reported answers from respondents. If the data is simulated or based on simulation, this should be openly acknowledged in the method section. Ideally, the study should involve real rather than synthetic primary data, and a strong paper should explain why the project was unable to gather real primary data. Longitudinal studies, experiments, and combination of methods could be used in the future to verify the research results in different cultural and financial market conditions.

12. CONCLUSION

The results show that it is necessary to develop the basic financial education programs which could put more people on the market and improve their financial situation.When developing a program like this one you have to think about the way how different people learn and their level of education. These measures are necessary to address the financial literacy gaps and promote the financial health of various population groups to help them be able to manage their financial resources appropriately, make sound choices that affect their savings, investments and debts and eventually become more financially and socially healthy in an ever-complicated world of economics. Moreover, because of the determined influence of financial literacy on consumption and household entrepreneurial behaviours, financial literacy can contribute to the overall economic stability in a meaningful manner, and decrease poverty Studies have also discovered that financial literacy can even make people earn higher incomes, have additional friends, and consider risk. This portrays the significance of this to socioeconomic development. Educational programs to achieve such goals are supposed not just to teach theory. They should also ensure that they help people learn how to use money in the real world with a view to being able to make prudent decisions in regards to financial products and services. This will lead to greater financial freedom and wealthyness. A new principle of behavioral economics in the framework of financial literacy is vital when developing effective and specific strategies of financial education to help eliminate cognitive biases and reinforce sustainable financial behaviors among various groups of people. This implicitly acknowledges that financial literacy alone might not be enough to change behaviour, unless influenced by the embedded psychological factors, such as risk aversion and locus of control, which financial education might be able to reduceBecause of this, effective financial education programs should incorporate resilience training and treatments that spur confidence, particularly in women. This will help the people irrespective of their backgrounds in their financial wellbeing. These programs should also work towards simplifying the challenging financial concepts and indulge in on-job training so that individuals could be able to use what they acquire in their lives. This will help children to learn how to spend on their money more effectively, to break down investment and to get to know risks and returns. Policymakers, teachers and banks should ensure that such large-scale financial literacy programs are a priority so that they can make sure that the skills that individuals need to make financial decisions and to be financially successful in the long run.

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