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The Role of Financial Literacy on Enhancing Expected Utility in Investment Decisions Among Young Professionals

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Abstract

Financial literacy is essential for young professionals to make better investment decisions. The seminar workshop on financial literacy was used to equip young professionals with skills to understand various investments and its risk—most research dwells on measuring, comparing, and formulating policies on financial literacy. Only a few studies focus on an effective intervention measure, such as a seminar workshop on financial literacy to improve investment decisions. This study aims to determine the significant role of financial literacy in enhancing expected utility in an investment decision. A quasi-experimental pretest-posttest technique was used for the 62 young professionals who accepted the invitation to volunteer in the study. The Bayesian Paired Sample t-test depicts the result favoring the alternative hypothesis that the seminar-workshop enhances expected utility in an investment decision. The Cohens d standardized effect size confirms the more considerable improvements are in the SEC and the stock market, while confusion arises in stocks versus savings.

Keywords: *Expected Utility, financial literacy, quasi-experimental, Bayesian Paired Sample t-test*

INTRODUCTION

Financial literacy gained attention from policymakers, financial institutions, and researchers several years ago. Managing personal finance has become essential for future financial needs, such as children's education, retirement, and long-term investment, and requires careful attention. Individuals must decide on short-term savings and loans, including medical and life insurance needs(Hastings, Madrian, & Skimmyhorn, 2013). Among all these needs, financial literacy conveys the understanding of money and its use, including managing income and expenditure and utilizing the primary method of working and exchanging money. Financial literacy involves evaluating current situations that require understanding insurance, credit, savings, and borrowing (Tomášková, Mohelská, & Němcová, 2011).

The fundamental understanding of key financial views critical to managing and investing funds to increase wealth and security depends primarily on understanding the financial concept and terminologies(Jappelli & Padula, 2013). Individuals need a decent knowledge of the features of borrowing and investing. This knowledge includes understanding cash reserve, financial products, stock investment, risk, bonds, and mutual funds. Further, personal investment requires awareness of the association between high-return investment and high risk, recognizing that market value rises and falls (Agarwal, Amromin, Ben-David, Chomsisengphet, & Evanoff, 2015). Attaining this level of understanding involved a new set of skills about the workings of financial products' advantages and disadvantages.

Unfortunately, studies depict that young professionals need to gain knowledge of personal investment. It took much work for them to make correct decisions due to inadequate personal finance education(Zazili, Ghazali, Bakar, Ayob, & Abd Samad, 2017). They need financial skills since the current development in the financial market restored focus on the importance of financially literate people. Further, financial literacy helps young professionals prepare for challenging financial situations through their knowledge of mitigating risk, such as buying insurance, differentiating assets, and accumulating savings(T. Singh, 2020); (Borines, 2018).

Typically, financial literacy measures an individual's knowledge of finance and economics in financial decisions related to portfolio investment, retirement planning, and savings (Zazili et al., 2017). Financial experts claim educated consumers promote better competition and effective markets (Remund, 2010). Hence, this study attempts to measure investment literacy among young professionals, which is the understanding and knowledge of basic financial and economic

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concepts, including the ability to use knowledge to decide on personal investment. Moreover, this research attempt to examine the significance of a seminar-training in enhancing the expected utility in the investment of participants.

An increasing number of research suggest that financial literacy is a vital component of financial and economic stability. People wanting to capitalize readily access various financial avenues such as credit cards, business loans, mortgages, and leasing(U. Singh, 2014). Funds rationally utilized produce extreme values, while confusion and ambiguous decision process come from underprivileged information. Training in financial literacy assists in managing financial resources effectively(Adil, Singh, & Ansari, 2022). The findings revealed that investors with low financial literacy leaned towards unfavorable or irrational investment decisions and increased the probability of accumulating a high level of debt. Experts observed that investors with low financial literacy keep an undiversified portfolio and refrain from stock investment. The belief is that people with limited income and low financial skills are at critical risk of making quality investment decisions(Chung & Park, 2019). Policymakers consider financial education the key to a better investment decision, but whether it affects the behavior still needs clarification. However, literate investors can avoid biases and make sound financial decisions. The importance of a rational investment decision because of financial literacy is evident(Maheran Nik Muhammad, Jantan, Fauziah, & Taib, 2009).

This study is based on the Expected Utility Theory (EUT), the expected value of an action to an investor, which is the product of the sum of the value to the investor of each possible outcome of the action by the probability of the result happening(Mongin, 1998),(Arianti, 2018). The investment is made with a certain amount of risk projected in the concept of expected utility. Based on the standard decision theory considering several alternative courses choosing the action with the most significant expected utility(Hershey & Schoemaker, 1980), (Khan, 2020)

In business decisions such as operations, marketing, capital expenditures, insurance, and investment, the rule maximizes expected utility, expressed in potential monetary losses and profits(Cappello, Zonta, & Glišić, 2016). Investors use the likelihood estimation of the outcomes of opportunities, along with their associated monetary losses and profit, to measure expected monetary profit(Hey & Orme, 1994), (Pettigrew, 2015).

Committing errors and biases in investment decisions are common among investors with low cognitive ability and meager financial knowledge. Investors with a high level of financial literacy tend to depict extreme behavior in borrowing and utilizing their credit cards in an informed manner(Baker, Kumar, Goyal, & Gaur, 2019). Further, investors with high-investment literacy have a comparably low level of confidence compared with investors with low-investment literacy are brimming with overconfidence(Sekita, Kakkar, & Ogaki, 2022).

Thus, financial literacy plays an essential role in shaping investors' expected utility by furnishing more informed and effective financial decisions. Increasing financial literacy help an individual enhance their understanding of the cost and benefits of various financial choices and eventually improve their financial outcomes.

Methodology

The pre-test and post-test as a quasi-experimental design were used in this study to determine the effectiveness of seminar-work shop to significantly enhance participants' financial literacy in investment decision-making (Rogers & Revesz, 2020). The subjects are the seminar-work shop participants willing to strengthen their personal investment decision skills. Sixty-two young professionals joined the seminar workshop. Before the start of the seminar workshop, they answered the pre-test and later the post-test. This study assumed that an increase in financial literacy evident in a higher score on the post-test than a pre-test suggests better investment decision skills in personal investment relative to attending the seminar-workshop after the pre-test.

The presence of research directionality is an advantage of a pre-test and post-test design, which is the dependent variable of testing the decision skills of the participants in personal investment before and after the seminar-workshop, the independent variable(Bell, 2014). As a quasi-experimental design technique, the participants in the study are not randomly assigned. Instead, the association between increasing financial literacy through a seminar-workshop increases the investment decision skills of the subjects(Reichardt, 2009).

Specifically, the one-group posttest-only design, also called a one-shot case study, was used to measure the dependent personal investment decision skills among young professionals following the seminar workshop. This research design does not require a control group. At the same time provide the advantage of comparing the score using the same instrument in the participants before the seminar-workshop treatment(Mildner, 2019).

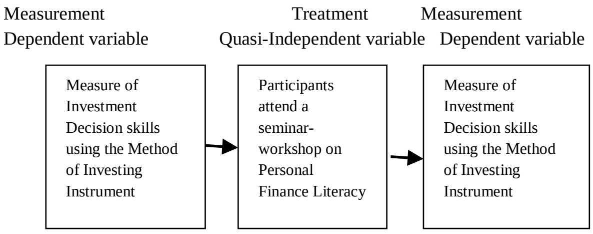

Figure1. One-group pretest-posttest quasi-experimental group experimental design on the effect of the seminar-workshop in significantly improving the investment decision skills of young professionals

As depicted in Figure 1 above, the one-group pretest-posttest design based on the concept of (McCaleb, Andersen, & Hueston, 2008)measures the investment decision skills of participants before and after the seminar workshop on personal financial literacy. The participants were not randomly assigned to groups. This means that any other

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variables related to personal investment, such as previous experience, other seminar-workshop in personal financial literacy attended, or other work related to finance, were beyond the control of the research and may influence the result. Further, the study lacked a control group; the method is vulnerable to some threats to internal validity.

The research is undertaken to measure whether the seminar workshop on personal financial literacy influences the capability to make personal investment decisions with the assistance of an adopted questionnaire. The questionnaire based on the works of (Madura, Casey, & Roberts, 2019)measures the participants' ability to make the correct investment decisions. The questions are situation-based and require the participants to evaluate the circumstances and consequences of their actions based on imaginary financial market conditions. The questions were designed so that the participants' response imitated their fundamental financial literacy understanding and investment decisions based on the following topics: cash reserve, financial products, stocks, risk, dividends, SEC, bonds, and mutual funds.

On initial, before the start of the seminar workshop, the participants took the pretest, and after the treatment, the seminar-workshop, the posttest. The pretest and post-test questionnaire comprises 17 items that collect information about personal financial literacy and its effect on the participant's investment decision. The participants choose the best decision to take depending on the stated situation.

The quasi-experimental pretest-posttest design contained a comparison of the investment decisions skills of the same group of participants before and after the financial literacy seminar workshop. The objective is to determine if the seminar-workshop significantly improved theparticipants' investment decision skills.

The Bayesian paired sample t-test was used to compare the score difference between the pretest and posttest of the same group of participants after attending the seminar workshop. The analysis assists in understanding whether significant improvement exists between the pretest and posttest(Norouzian, de Miranda, & Plonsky, 2018). The prior information is the participants' pretest scores before the seminar-workshop's start. At the same time, the posterior is the score of the participants on the posttest after the intervention. The prior distribution was used to estimate the posterior distribution for the mean difference between the pretest and posttest scores (Westera, 2021). This step updated the knowledge about the seminar-workshop's effect on the participants' investment decisions. In determining the probability that the seminar workshops significantly affected investment decisions, the posterior distribution was evaluated by calculating the credible posterior interval of the mean difference (Cleophas, Zwinderman, Cleophas, & Zwinderman, 2018).

The Bayesian analysis was deemed the appropriate statistical technique since the methods can handle smaller sample sizes and allow the informative priors to fill the lack of data. The Bayesian approach furnishes more interpretable and intuitive results than the parametric approach (Rouder, Speckman, Sun, Morey, & Iverson, 2009). The Bayesian approach, aside from handling non-normal distributed data, use the posterior distribution to provide the probability distribution of the parameter of investment distribution used to make informed decisions based on the data(Gönen, Johnson, Lu, & Westfall, 2005)

Dependence pertains to the two sets of scores coming from the same set of participants who were measured twice over time, pretest and posttest, using the same set of instruments with a different period, before and after the seminar-workshop.

In case a significant difference exists between the pretest and posttest, there is a need to determine the practical significance in improving the scores of participants based on the comparison between the pretest and posttest scores. The standardized mean difference (Cohen's d) was used. Cohen's d result and the interpretation (Becker, 2000)

Cohen's d	Effect size
0.2	Small
0.5	Medium
0.8	Large

Results and Discussions

In total, 62 young professionals participated in the seminar-workshop on personal financial literacy to improve investment decisions which were evaluated using the pretest-posttest without control group evaluation design. Participants completed the methods of investing instrument, which assessed their investment decision before and after the seminar-workshop, where the assessment score could range between 0 to 1. Depicted in the Bayesian paired sample t-test was the effect of the seminar-workshop on the investment decision in a quasi-experimental pretest-posttest design. The posterior distribution has a mean of 0.688, a standard deviation of 0.237, and a 95 percent credible interval of [0.547, 0.790]. The Bayes factor was 417.98, providing extreme evidence in favor of the alternative hypothesis that the seminar workshop improves participants' investment decisions. A sensitivity analysis using a Cauchy distribution as the prior produced a similar result

Table 1. Bayes Paired Sample t-test results comparing the Pre-test and Post-Test results in Financial literacy on investment

					95% Credible Interval	
	Mean	**S.D.**	**BF_{-0}**	**error %**	**Lower**	**Upper**
Pretest	0.446	0.205	417.977	~ 5.350×10-6	0.341	0.551

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Posttest	0.668	0.237			0.547	0.79

The Cohen's d effect was used to determine the practical significance of improving the scores based on the difference between the pretest and post-test results—an overall medium effect size (0.55). The result confirmed that the participant's financial literacy is vital for making informed investment decisions which increase their expected utility through a better understanding of managing debt, saving and investment, budgeting, and financial concept. Financial literacy helps the participants make an informed decision about their assets, which can ultimately lead to better financial outcomes.

The significant increase in personal financial literacy suggests a significant effect on expected utility. Participants become more financially literate, understand the financial implications of various choices, and are better equipped with investment decision skills that maximize their expected utility (Adil et al., 2022), (Chung & Park, 2019), (Maheran Nik Muhammad et al., 2009).

The outcome of the seminar-workshop on financial literacy helps the participants understand the various market investments based on preference and available information, such as real estate, mutual funds, bonds, and stocks. They recognize the benefit derived from a decision or outcome of the different investments that best achieve their financial goals. It was also clear to the participants that managing the investment risk inherent in any investment is essential (T. Singh, 2020). They distinguish that financial literacy seminars are tools to help them make informed decisions about their investment and minimize risk (Borines, 2018).

The medium effect illustrates a better set of investment goals which helps them set realistic investment goals depending on their current financial situation and risk tolerance. Understanding their investment goals helps them make more informed investment decisions on uncertain outcomes, weighted by their probability of occurring and the amount they should invest. Moreover, managing portfolios becomes more straightforward for the participants, allowing them to manage their investment portfolios by understanding the interaction between risk and return, increasing their financial literacy to make informed decisions about a diversified portfolio, and monitoring performance to balance the investment. Above all, financial literacy helps participants avoid investment scams by identifying and preventing fraudulent investments.

Table 2. Cohen's d magnitude of difference between the pretest and post-test result

Item	Pre-test	Post-test	Gap	Pooled S.D.	Cohen's d effect size	Interpretation
Cash reserve or emergency funds	0.90	0.94	0.04	0.65	0.06	Small effect size
Financial products	0.73	0.92	0.19	0.59	0.33	Small effect size
Purchasing stocks	0.40	0.80	0.40	0.45	0.89	Large effect size
Understanding risk	0.50	0.80	0.30	0.47	0.64	Medium effect size
Investing in stock	0.24	0.56	0.32	0.31	1.04	Large effect size
Understanding investment product	0.47	0.60	0.13	0.38	0.35	Small effect size
Trading of stocks	0.23	0.60	0.37	0.32	1.17	Large effect size
Initial Public Offering	0.68	0.82	0.14	0.53	0.27	Small effect size
Steps in stock trade	0.52	0.74	0.22	0.45	0.50	Medium effect size
Stock exchanges	0.27	0.64	0.37	0.35	1.05	Large effect size
Stock price increase	0.65	0.80	0.15	0.51	0.30	Small effect size
Stock price decrease	0.42	0.72	0.30	0.42	0.72	Medium effect size
Dividend and benefits	0.44	0.80	0.36	0.46	0.80	Large effect size
Stocks versus savings	0.35	0.00	-0.35	0.18	-2.00	Small effect size
SEC roles	0.10	0.34	0.24	0.18	1.38	Large effect size
Bonds	0.27	0.44	0.17	0.26	0.64	Medium effect

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						size
Mutual funds	0.42	0.84	0.42	0.47	0.90	Large effect size
Overall	0.45	0.67	0.22	0.40	0.55	Medium effect size

The significant medium effect indicates that the seminar-workshop is an effective tool to help young professionals increase their investment skills. Generally, participants succeeded in setting clear financial goals (Jappelli & Padula, 2013). They were able to identify their long-term and near-future financial status, such as financially preparing for their retirement, buying a home, paying off their debt, or saving for emergencies. They were ready to make better financial decisions as soon as they could define their goals. Moreover, they could distinguish the advantages unique from real estate, mutual funds, bonds, and stocks. Each type of investment offers its own risk and reward, considering the uncertainty of an outcome and the potential for negative consequences. The financial literacy seminar increases the awareness of the participants on the inherent risk and rewards of each type of investment before making a decision.

The participants also appreciate the importance of starting to invest and making consistent and logical decisions with their investment goal based on the available information, even in a small amount (Arianti, 2018). Since it is better to start with a small amount of money and gradually increase investment as they gain more experience and confidence. Aside from the importance of a gradual but regular increase in investment, the participants learn that diversifying investment across various investment types, geographies, and industries reduces risk. Moreover, in a long-term strategy, patience is a virtue. Panicking and selling stocks during a bear market or getting excited and buying during a bull market is not the best strategy. Instead, adhering to the investment plan and letting time grow the investment is more prudent, reducing the likelihood of irreversible losses on a particular investment outcome.

After the seminar workshop, the participants better evaluate the cost and benefits of various investment opportunities. They are more likely to select the investment with the highest expected return considering their risk preferences. Also, by increasing their financial literacy, the participants are more likely to gather the information that made them less likely to experience financial distress and bankruptcy before deciding on borrowing and debt management.

During the seminar, the participants recognized that professional financial advisers' services help create personalized investment plans based on the client’s goals, focus, and risk tolerance. Aside from providing guidance and support, financial advisers assist their clients in navigating the complex world of investing. Finally, the participants understand that all investment involves risk and that there is no return guarantee. However, increasing financial literacy with patience and discipline increases the chance of attaining financial goals.

Significant improvement in financial literacy among participants occurred in the general knowledge of the stock market, such as SEC roles (1.38) trading in stock (1.17), stock exchange (1.05) investing in stocks (1.04). The participants significantly increased their knowledge and awareness that publicly traded companies are available in the stock market. Buying and selling of stock happen in the stock market, depending on the price determined by supply and demand. The participants realize that the broker assumes the role of buying or selling stocks depending on price changes. They also understand the part of the Security and Exchange Commission (SEC), which facilitates stock trading and assists in maintaining a level playing field. With additional awareness of the mechanism of stock investment, participants become more eager to learn that stock means buying shares of ownership in a company. They profit by buying stocks and selling when their value increases over time. As company shareholders, they appreciate their benefit increases as the company grows and generates dividends.

It is evident that the medium effect occurred in the following topics mutual funds (0.90), dividends and benefits (0.80), and purchasing stocks (0.89) which are all associated with investing in the stock market. Participants grasped that these offer various benefits to investors. For instance, the participants get the concept of the mutual fund as an investment vehicle that pools money from various investors and buys a diversified portfolio of securities, bonds, and stocks. The participants understand that as investors the mutual funds, mutual funds spread the risk of their investment by investing across multiple securities. Managing securities is challenging, and getting a good fund manager can manage securities.

A moderate understanding exists of the topic of dividends. Participants understand dividends as income corporations distribute to their shareholders based on the investor’s amount of stocks and the firm’s financial performance(Cappello et al., 2016). However, only a few grasp that the benefits of dividends to an investor is to providing a steady stream of income, reducing risk, and increasing the value of stocks, considering that the benefit of dividend-paying stocks is more excellent stability and less risk.

Participants easily grasped that purchasing stocks involved purchasing shares of ownership in a corporation, becoming part owner of the company, and being entitled to part of the profit. On the other hand, some mixed-up arise from the several benefits stocks offer, such as voting rights, dividend payments, and potential capital gains. Moreover, some missed that stocks are also volatile and risky, with fluctuations in the stock value based on several factors.

Participants’low levels of understanding are on the following topics cash reserve or emergency funds (0.06), financial

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products (0.33), understanding investment product (0.35), Initial Public Offering (0.27), and stock price increase (0.30)

Participants understand the purpose of emergency funds and cash reserves. It allows them to identify the difference between the two and, during financial crises, how these two assist them(Tomášková et al., 2011). The participants already contain enough financial literacy to build and maintain cash reserves. They recognize the importance of investment, savings, and budgeting to build enough funds to tide them over emergencies or unexpected emergencies. There were some challenges participants encountered in making informed decisions. Participants often needed to consider vital information to evaluate options suitable for their investment needs. Strong desire arises in their desire to secure a financial future, such as retirement, as a long-term goal. However, they recognize that mistakes in managing cash reserves and emergency funds endanger financial preparedness for an untoward situation that may arise.

Understanding investment and financial product allow the participants to understand the concept of asset allocation, diversification, return, and risk. Participants fumble understanding concepts of various investment products and decide on investments that are suitable for their needs. In addition, some participants miscalculate different investment products depending on their risks, benefits, and characteristics. Misalignment exists in their investment goals and risk tolerance. The participants need improvement in making informed investment decisions that empower them to compare various investment products, evaluate the potential risk and returns and understand their costs and fees. Monitoring investment performance is an area that required improvement in the participants in financial literacy, which required them to evaluate their investment performance.

Conclusion and Recommendations

This study confirmed Expected Utility Theory that participants, after attending the seminar-workshop improved their investment decision skills. The seminar workshop increased their financial literacy and investment decision skills, reducing uncertainty and increasing their expected utility. Participants recognized that making investment decisions without knowing the outcome is decision-making under uncertainty. Typically, they choose the better alternative that provides the highest expected utility, which depends on their risk tolerance. Attending the seminar-workshop enhances their investment decision skills, reduces their risk exposure, and increases expected utility.

Notably, topics on SEC have the highest significant increase in financial literacy, implying that the participants understood that the SEC regulatory presence in the stock market reduces the risk of fraud and increases their expected utility. Similarly, the most prominent effect in understanding the stock market mechanism is that participants were confident in the additional knowledge that their expected utility increased in these areas.

Conversely, ambivalence manifested in the understanding of stocks versus savings which showed the lowest effect among the participants. Since savings entail lower risk but a lower expected utility against stock investment with higher risk but a greater expected utility. There is a high level of uncertainty and indecision for participants to decide between stocks and savings.

A more extensive and detailed workshop on how much to allocate in stocks and savings can increase the knowledge and skills of participants. Investors' confidence improves with a tool or model that can guide them in reducing risk and increasing expected utility.

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