(IJTBM) 2025, Vol. No. 15, Issue No. I, Jan-Mar **e-ISSN: 2231-6868 p-ISSN: 2454-468X**

The Influence of Framing on Financial Decision-Making and Risk Tolerance

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DOI:10.37648/ijtbm.v15i01.002

[1]*Received: 18 December 2024; Accepted: 19 January 2025; Published: 22 January 2025*

ABSTRACT

Classical economic theory assumes rational decision-making, as introduced by Adam Smith's concept of the "invisible hand," but real-world behavior frequently deviates due to cognitive biases like the framing effect. Behavioral economics, pioneered by Kahneman and Tversky, reveals that decision-making is influenced by how information is presented, leading to risk aversion in gain scenarios and risk-seeking in loss scenarios. This study explores these dynamics by presenting participants with positively and negatively framed financial scenarios, focusing on investment decisions.

Participants from diverse demographics completed surveys designed to isolate the effects of framing on financial behavior. Scenarios varied across key variables, including potential gain/loss magnitude, investment duration, external news, and personal financial contexts. A fixed initial capital of $150,000 was used to ensure uniformity in decision-making, with additional scenarios personalized to participants' income levels to evaluate framing's impact in real-world-like settings.

Results confirm that framing significantly impacts decision-making. In positively framed scenarios, participants predominantly chose risk-averse options, prioritizing guaranteed outcomes. Conversely, negatively framed scenarios elicited greater risk tolerance, with participants opting for probabilistic choices to avoid losses. For example, 73.1% of participants chose a guaranteed $5,000 gain in a positively framed scenario, whereas a majority preferred a 50% chance of losing $10,000 to a certain $5,000 loss in a negatively framed scenario. External optimism, such as bullish market news, marginally increased risk-taking but did not override the dominant framing influence.

Demographic analysis revealed gender-based differences: men exhibited higher risk tolerance across all scenarios, while women consistently preferred risk-averse options. Additionally, the potential for higher returns or losses amplified risk-taking behavior, though the effect was less pronounced when scenarios tied outcomes to participants' personal income. Time duration, another variable, showed limited influence, with most participants favoring certainty over faster returns.

These findings align with established theories, highlighting the framing effect's role in shaping financial decisions. Practical implications include the need for financial advisors, policymakers, and institutions to tailor communication and decision-making frameworks. By leveraging insights into framing, they can promote better client outcomes, reduce irrational behaviors, and enhance financial planning strategies.

This research contributes to behavioral economics by providing empirical evidence of framing's effects in controlled and personalized financial contexts. Future studies could expand by incorporating emotional factors and examining

[1] ***How to cite the article:*** Shah S (January 2025); The Influence of Framing on Financial Decision-Making and Risk Tolerance; *International Journal of Transformations in Business Management,* Vol 15, Issue 1, 9-27, DOI: http://doi.org/10.37648/ijtbm.v15i01.002

framing interactions with other biases in dynamic environments, offering a deeper understanding of cognitive influences on economic behavior.

Keywords: *Behavioral economics; Framing; investment decisions*

INTRODUCTION

Classical economic theory relies predominantly on the assumption of rational behaviour by all economic agents (Hayes, 2024). Behaving rationally assumes that people will always make the decisions which result in the maximum benefit or utility for them.

This idea was mainly explored through Scottish economist Adam Smith's book: "The wealth of nations". He introduced the idea of an "Invisible hand", which dictates the free market through the laws of supply and demand to decide what the socially optimal amounts of goods produced and resource allocation should be (Majaski, 2024). It was proposed that self-interested individuals unintentionally promote the general welfare of society by pursuing their own economic interests – a foundational concept in neoclassical economics. This assumption of rational, utility maximising behaviour became a cornerstone of most modern economic models and theories. However, real world observations almost always seem to show deviations from economic predictions due to the limitation that not all individuals may always act in self-interest as they could be subject to a number of various cognitive biases or other limitations in their decision making. Adam Smith also discussed this limitation in his book "The theory of Moral Sentiments", where he mainly discusses how emotions, sympathy, and moral reflection guide human behaviour, and may lead to irrational economic behaviour. (Smith, 1759)

Eventually, the careful examination and study of all the various factors which may affect economic behaviour and human decision making led the way for a new field of study known as Behavioral economics. Behavioural economics is a field which combines elements of economics and psychology to understand how and why people behave the way they do in the real world (Mheslinga, 2022). It goes against the previously agreed upon neoclassical models and assumption that all economic agents act rationally, and posits that humans often rely on mental shortcuts, exhibit biases, and respond to the *framing of* information. The bias in decision making formed due to the latter of the three is known as the **framing effect.** In particular, the framing effect refers to the cognitive bias wherein an individual's choice from a set of options is influenced more by how the information is worded than by the information itself (Ventre, V., Martino, R., Castellano, R. *et al, 2023)*

Two seminal and recognized figures in the field of behavioral economics are Daniel Kahneman and his collaborator Amos Tversky**.** The pair were also key figures in initially formalizing and researching "the framing effect". They highlighted how individuals' choices are influenced by the way options are presented rather than by the objective outcomes themselves, and how this can cause deviation from rationality in economic choices as individuals may not care about maximum utility due to how a situation is presented to them. In their pioneering work titled "Prospect Theory: An Analysis of Decision Under Risk" (1979), Kahneman and Tversky reported the finding that people tend to avoid risks when outcomes are framed as gains and take risks to avoid losses when outcomes are framed negatively (Kahneman, Tversky, 1979)

The framing effect can be observed in multiple different fields and instances in real life, showcasing its practical relevance beyond just theory. For instance, in finance investors may be less willing to take risks when news and opinion on the market is positively framed, whereas they might be more speculative and take more gambles with negative frames. The framing effect can significantly alter risk perception, influencing financial decisions, policy-making, and consumer behavior.

Through the collection of quantitative primary data through a survey, we will be attempting to observe and examine the effect that the framing of certain scenarios will have on the investment and financial decision making of participants. This study will investigate the effects of positive and negative framing on decision making under controlled financial scenarios where participants begin with a standardized amount of money available to invest ; The removal of external factors such as net worth or varying amounts of disposable income per participant will focus the observations on the effects on decision making and risk tolerance of participants created by just the framing itself. Additionally, per each scenario, a new variable will be added to try and examine the effects of each of these variables on decision making too, and whether positive and negative framing affects the outcomes. This study aims to assess the impact of giving participants investment/financial scenarios in a positive and negative frame and also trying to observe other factors which can affect decision making along with the framing.

The findings will help deepen the understanding of cognitive biases in financial decision making and how framing affects real world economic behaviors. These insights are important for financial advisors, policymakers, and institutions seeking to create more effective decision making frameworks and better client outcomes.

Section II of this paper will discuss relevant works and research associated with this topic, Section III describes the overall methodology of research, implementation of the survey, the contents of the survey and the demographics who responded to the survey. Section IV discusses the overall results of the survey, the results represented by the different demographics and sub groups and how the introduction of a new factor in each scenario affected decision making. Finally, section V will present the conclusions of the study and discuss future works and the changes to make while researching in the future

RELATED WORKS

A. Behavioral economics and the impact of message framing on financial planning intentions

This study investigates the influence of positive and negative message framing on an individual's financial planning behaviour. Participants were given narratives that either framed financial planning behaviour positively or negatively. The study aimed to see how the framing impacts each individual's financial planning habits and then statistical tests (e.g., ANOVA, regression analysis) were used to examine the effect of message framing and regulatory fit on financial planning intentions. This is a similar approach we are taking, as our study also gives participants several different scenarios with a positive or negative frame to observe how the framing affects their decision making and risk tolerance and then uses similar statistical tests to analyze the data collected. Both studies also operate in a predominantly financial context ;Todd's research focuses on financial planning intentions (retirement, budgeting, and insurance), while my study explores risk tolerance and decision-making in investment scenarios.

B. Affect and the framing effect within individuals over time: risk taking in a dynamic investment simulation (2010)

This paper investigates how emotions can interact with the framing effects to influence risk taking behaviour in financial decisions. The researchers specifically zoom into how pleasant and unpleasant feelings may moderate people's risk taking tendencies when they are presented with gains and losses The study involved 101 participants over 20 consecutive days in an online stock investment simulation. Participants made daily decisions on whether to buy or sell stocks based on their perceived gains or losses. Throughout the experiment, participants reported their affective states (pleasant/unpleasant feelings) before making investment decisions. The findings of this study stayed consistent with the overall Framing effect theory as participants became more risk averse after gains and riskier after some losses. However, the effect of emotions had changed the outcome. Pleasant emotions reduced risk aversion even after gains and reduced risk seeing behaviour after losses, making investors more conservative. This study is directly relevant to my research on the framing effect and its impact on financial decision-making. While my research focuses on how positive and negative framing influences risk tolerance, this study introduces affective states as a factor that interacts with framing.

C. "Rational Choice and the Framing of Decisions" (1986)

This groundbreaking paper from Kahneman and Tversky challenges the common models for decision making and introduces the role of framing in altering an individual's decision The authors argue that the framing of choices, along with cognitive biases, leads to deviations from rational decision-making. The study used multiple different experiments where participants were given scenarios that involved them making decisions in a medical and financial context. The experiments in this paper provide direct evidence of how framing influences choices under risk, particularly the asymmetry between gains and losses. The researchers found that participant's preferences were inconsistent when identical decisions were framed differently and that positive frames led to risk averse behaviour whilst negative framing led to risky behaviour which is consistent with the initial prospect theory. Additionally, This study shows how framing can lead to suboptimal choices, which has direct implications for financial decision-making, investment behavior, and policy-making—key elements of my paper.

D. "Framing Effects, Selective Information, and Market Behavior – An Experimental Analysis" (2004)

This study titled "Framing Effects, Selective Information, and Market Behavior" explores how framing and selective information influence trading behavior in competitive asset markets. The researchers used a 2x2 factorial design with 64 participants trading assets in a computerized double auction market over multiple periods. Participants were provided with both relevant and irrelevant dividend information, framed either positively or negatively. The study found that positively framed participants held assets longer, while negatively framed participants sold more quickly, amplifying the **disposition effect**—the tendency to sell assets in gain situations faster than in loss scenarios. While framing significantly influenced individual trading behavior, it had limited impact on overall market efficiency or price levels. These findings highlight the role of psychological biases, such as framing and anchoring, in shaping individual decision-making, reinforcing the relevance of behavioral insights in financial markets.

METHODOLOGY & IMPLEMENTATION

This paper takes inspiration from the methodologies of Daniel Kahneman and Amos Tversky's "Prospect Theory: An Analysis of Decision Under Risk" (1979) and *"Rational Choice and the Framing of Decisions" (1986) since they too use various different scenarios offered to participants but with either negative and positive framing to observe how the framing effect affects their decision making for identical scenarios.*

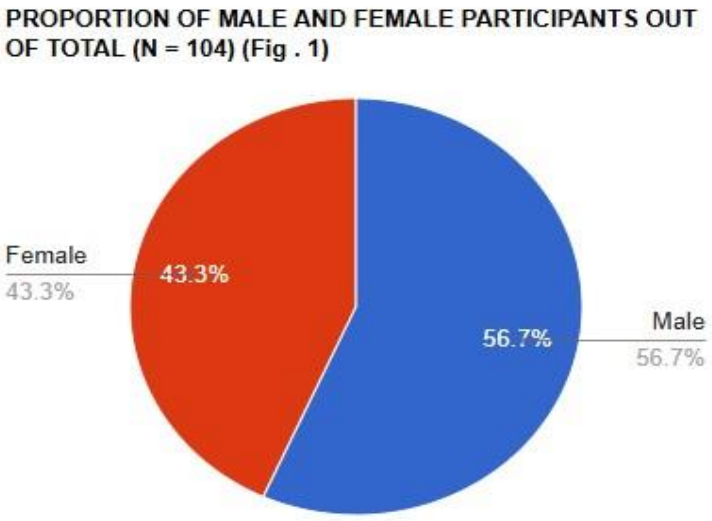
A range of people were used for this survey, mostly spread between residents of the United Arab Emirates and people living in Mumbai. The survey was distributed through my email and messages. A total of 104 responses were collected over a 2 week period

Participants were made aware before starting the survey that their responses would be used for academic research. They were also made aware of the confidentiality of all of their answers and information to maintain complete privacy and also incentivize them to provide honest and true answers. All participants were presented with the following message: ***"Disclaimer: Your participation in this anonymous survey is voluntary, and your responses will be kept confidential and used solely for academic research purposes."***

At the start of the survey, participants were required to answer a series of questions about their demographic. They were made to order questions about their gender, age, location and household income. Knowing this information about each participant allows for greater analysis of the results and enables us to compare the difference in the impact of our decoy amongst different subgroups and determine which group was most/least influenced by the positive/negative framing of scenarios.

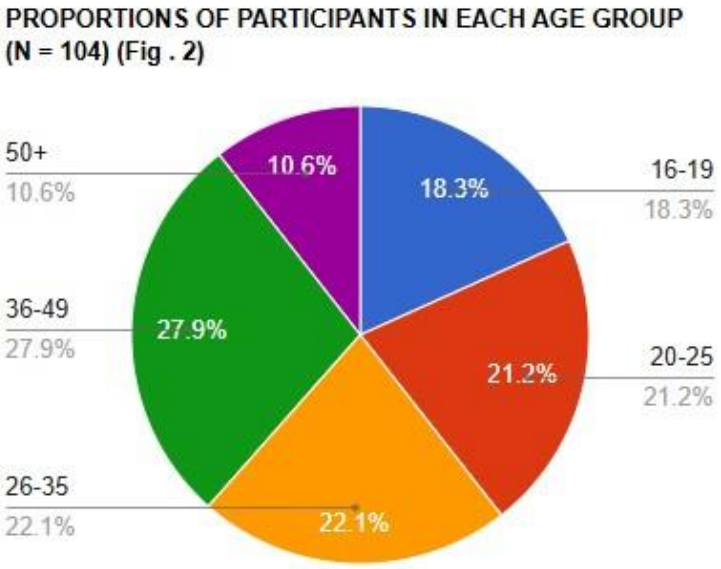
Demographics of participants:

Fig.1 shows the number of males and number of females out of the total number of participants for the survey conducted.



The majority of participants were male, with the male population making up 56.7% of the total

Fig. 2 shows what proportion of respondents fall under each age bracket for the survey



As we can see from the **Fig.2** pie chart, the largest age group represented by the survey is the 36-49 bracket, making this the model group. The 20-25 age group and 26-35 age group are nearly equally represented, contributing 21.2% and 22.1% of participants, respectively. Similarly, the 16-19 age group makes up 18.3% of participants, which is only slightly lower than the two prior groups, indicating a fairly balanced spread across younger participants. Collectively, the 16-19 and 20-25 age brackets represent 39.5% of participants, indicating a strong presence of younger respondents who may exhibit distinct attitudes toward financial decision-making, compared to older participants.

Fig.3 shows the self-proclaimed financial literacy on a scale of 1 to 5 for each participant.

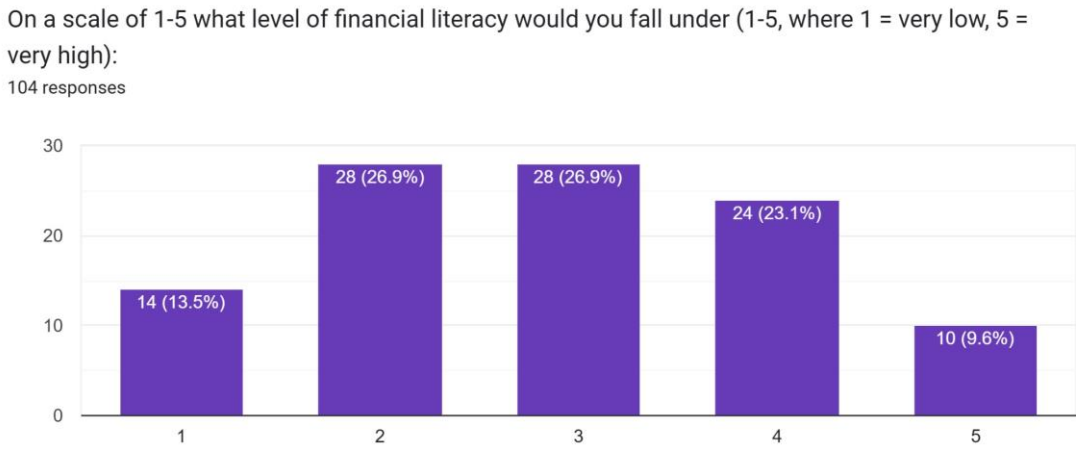
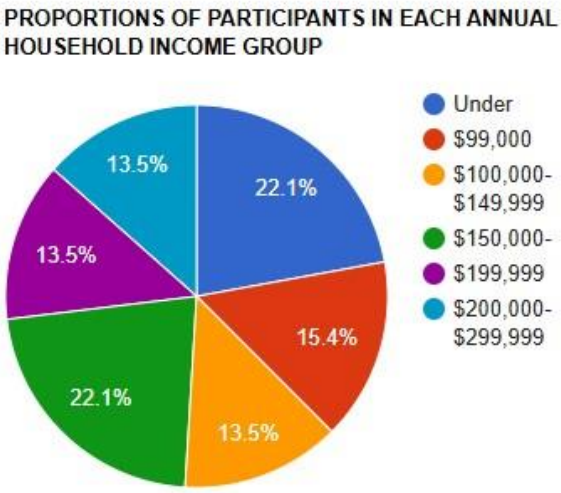


Fig. 4 shows what proportion of participants fall under each bracket of household income PA



For the design of the survey, different scenarios presented to the participants were based on different variables which were being tested to observe their effect on decision making and risk tolerance. For instance one of the scenarios presented was:

“You choose in between making 2 investment decisions which will span over varying durations of time.

Option A: Have a 100% chance of increasing your total investment portfolio by 7% in a year

Option B: Have a 50% chance of increasing your total investment portfolio by 7% in the next 3 months but have a 50% chance of gaining nothing”

This aimed to test the variable of duration of time to see the effect it would have on participant’s decision making along with the framing of each option and whether earning a reward in a shorter time span may increase the tolerance for risk in participants.

The survey was designed to explore how framing influences financial decision-making and risk tolerance, directly addressing the research question: **"How does the framing effect affect financial decision-making and behavior?"**

Each question was structured to examine specific factors—such as time duration, external news, personal income, and probabilities—and how these interact with positive or negative framing to influence risk preferences. By framing scenarios as gains or losses, the survey tested whether participants would behave more risk-averse in gain scenarios or more risk-seeking in loss scenarios, consistent with established behavioral economics theories.

Providing participants with a fixed starting capital ($150,000) ensured that decisions were shaped by the framing of scenarios rather than differences in wealth or financial background. Later, by asking participants to respond within the context of their personal income, the survey examined how framing effects manifest in more realistic, personalized settings. This structure allowed the survey to reveal how framing affects decisions across both controlled and real-world contexts, directly contributing to understanding the mechanisms behind framing and its impact on financial behavior..

The following is the complete list of questions and scenarios presented to participants:

1) What is your gender

2) What age range do you fall under

3) Where do you currently live

4) On a scale of 1-5 what level of financial literacy would you fall under (1-5, where 1 = very low, 5 = very high):

5) Option A: You have a 100% chance of gaining $5,000.

Option B: You have a 50% chance of gaining $10,000 and a 50% chance of gaining nothing.

Option C: You have a 75% chance of gaining $7,500 but 25% chance of gaining nothing

6) You are faced with several investment decisions, but the investments are going down in value. These are the expected outcomes: which option do you pick?

Option A: You have a 100% chance of losing $5,000

Option B: You have a 50% chance of losing $10,000 and a 50% chance of losing nothing.

Option C: You have a 75% chance of losing $7,500 and a 25% chance of losing nothing.

7) You are faced with several more investment decisions, but the investments are going down in value and by a larger margin. These are the expected outcomes: which option do you pick?

Option A: You have a 100% chance of losing $30,000.

Option B: You have a 50% chance of losing $75,000 and a 50% chance of losing nothing.

Option C: You have a 75% chance of losing $50,000 and a 25% chance of losing nothing.

8) You are faced with several investment decisions. These are the expected outcomes: which option do you pick?

Option A: You have a 50% chance of gaining $75,000 and a 50% chance of gaining nothing.

Option B: You have a 100% chance of gaining $30,000.

Option C: You have a 75% chance of gaining $50,000 and a 25% chance of gaining nothing

9) Option A: You have a 100% chance of gaining $500,000 in 12 months through an investment

Option B: You have a 50% chance of gaining $500,000 in 3 months and a 50% chance of gaining nothing

10) Scenario: You're about to retire soon however your retirement fund is made up of investments, several of which have started losing money. These are your options

Option A: Sell all the investments which have started declining and lose a guaranteed 15% of your retirement fund. Option B: Keep the investments and have a 50% chance of losing a total of 25% of your retirement fund and a 50% chance of losing nothing.

Option C: Buy additional stocks to try and make additional profits and have a 25% chance of losing 5% of your retirement portfolio every year and a 75% chance of breaking even and losing nothing

11) A recent fluctuation in the NASDAQ was observed. NVIDIA's (NVDA) share price has increased by 12% over a month and there is a bullish sentiment in the market for its stock. Which option from the following would you choose: Option A: Invest in non-volatile bonds which guarantee a gain of $10,000 by the time of maturity Option B: Invest in NVIDIA and have a 50% chance of gaining $25,000 or a 50% chance of gaining nothing Option C: Invest in a mix of both NVIDIA stock and bonds to have a 75% chance of gaming $17,000 but a 25% chance of gaining nothing

12) You are 60+ years of age and planning to retire very soon. Unfortunately some investments have started to lose value and these are your following options, which do you choose

Option A: You have a 100% chance of losing $30,000.

Option B: You have a 50% chance of losing $75,000 and a 50% chance of losing nothing.

Option C: You have a 75% chance of losing $50,000 and a 25% chance of losing nothing.

13) What is your average annual household income range

14) Option A: You have a 100% chance of gaining 10% of your portfolio's value in profits.

Option B: You have a 50% chance of gaining 15% of your portfolio's value and a 50% chance of gaining nothing.

Option C: You have a 75% chance of gaining 12.5% of your current portfolio's value but 25% chance of gaining nothing

15) Option A: You have a 100% chance of gaining 10% of your portfolio's value.

Option B: You have a 50% chance of gaining 25% of your portfolio's value and a 50% chance of gaining nothing.

Option C: You have a 75% chance of gaining 15% of your current portfolio's value but 25% chance of gaining nothing

16) Option A: You have a 100% chance of losing 10% of your total investment portfolio

Option B: You have a 50% chance of losing 15% of your total portfolio and a 50% chance of losing nothing.

Option C: You have a 75% chance of losing 12.5% of your total portfolio and a 25% chance of losing nothing.

17) Option A: You have a 100% chance of losing 10% of your total investment portfolio

Option B: You have a 50% chance of losing 25% of your total portfolio and a 50% chance of losing nothing.

Option C: You have a 75% chance of losing 15% of your total portfolio and a 25% chance of losing nothing.

18) You choose between making 2 investment decisions which will span over varying durations of time. Option A: Have a 100% chance of increasing your total investment portfolio by 7% in a year

Option B: Have a 50% chance of increasing your total investment portfolio by 7% in the next 3 months but have a 50% chance of gaining nothing

19) How would you describe your risk tolerance for your $150,000 investment portfolio?

Option 1: Very low Option 2: Low Option 3: Moderate Option 4: High

20) How would you describe your risk tolerance for your actual investment portfolio and income?

Option 1: Very low Option 2: Low Option 3: Moderate Option 4: High

In this study, a chi-square test of independence was used to examine whether the framing of scenarios (positive or negative) influenced participants' decision-making. The test compared the observed frequencies of responses (Options A, B, or C) under each framing condition with the expected frequencies assuming no association between the variables.

The chi-square statistic was calculated using the formula:

$$\chi^2 = \sum \frac{(O_{ij} - E_{ij})^2}{E_{ij}}$$

where O_{ij} represents the observed frequency, and E_{ij} represents the expected frequency, calculated as:

$$E_{ij} = \frac{(\text{Row Total} \times \text{Column Total})}{\text{Grand Total}}$$

The test was conducted at a significance level (α) of 0.05, with degrees of freedom (df) calculated as $df = (\text{Number of Rows} - 1) \times (\text{Number of Columns} - 1) = 2$. A p-value below 0.05 would indicate a statistically significant association between framing and participants' decisions, suggesting that framing impacts financial decision-making patterns.

The following code was used to calculate the P-value for our chi square tests using Python:

from scipy.stats import chi2 p_value = 1 - chi2.cdf(chi_square_statistic, df)
df refers to the degree of freedom

RESULTS

Overall Results

Overall, throughout the survey participants stay consistent with the pre-existing theory of the framing effect. Participants were more likely to choose the risk averse option when the scenario was positively framed and they were going to gain something, and also more risk bearing when the scenario was negatively framed. The framing effect seemed to have a significant impact on risk tolerance for most participants.

The following tables showcase this observation.

The first scenario presented was one which was positively framed and aimed to observe solely the effect positive framing has on risk tolerance. Participants were asked if they would rather choose option A, B or C (Listed in the table) .

(Table 1)

Options	No. of participants that chose each option	% of total participants	Number of participants that chose the option who were Male	Number of participants that chose the option who were Female
A:You have a 100% chance of gaining $5,000 (Risk averse)	76	73.1	45	31
B: You have a 50% chance of gaining $10,000 and a 50% chance of gaining nothing (Risk bearing)	9	8.7	4	5
C: You have a 75% chance of gaining $7,500 but 25% chance of gaining nothing (Moderate risk)	19	18.3	10	9

Chi Square - 75.3653846153846
P value = 4.31136376649682E-17

Since the P value < 0.05, there is statistical significance as there's a clear preference for Option A, which is the risk averse option. Therefore we can conclude that there is an impact on the decision making of most participants due to the framing of the scenario.

These findings are further solidified by the responses to a similarly framed scenario presented to participants later in the survey, but they are told to answer according to their own personal income.

Options	No. of participants that chose each option	% of total participants	Number of participants that chose the option who were Male	Number of participants that chose the option who were Female
Option A: You have a 100% chance of gaining 10% of your portfolio's value in profits.	86	84.3	52	34

Option B: You have a 50% chance of gaining 15% of your portfolio's value and a 50% chance of gaining nothing.	8	7.8	2	6
Option C: You have a 75% chance of gaining 12.5% of your current portfolio's value but 25% chance of gaining nothing	8	7.8	5	3

Chi Square - 123.076923076923
P value = 1.88012069148124E-27

The answers to these 2 scenarios both result in P values significantly smaller than 0.05 which indicates a significant preference for one of the three options. In the case of both these positively framed scenarios, the preference is shown to the risk averse option which tells us that positive framing can have the effect of reducing risk tolerance and that most people are likely to be more risk averse when met with a positively framed financial scenario.

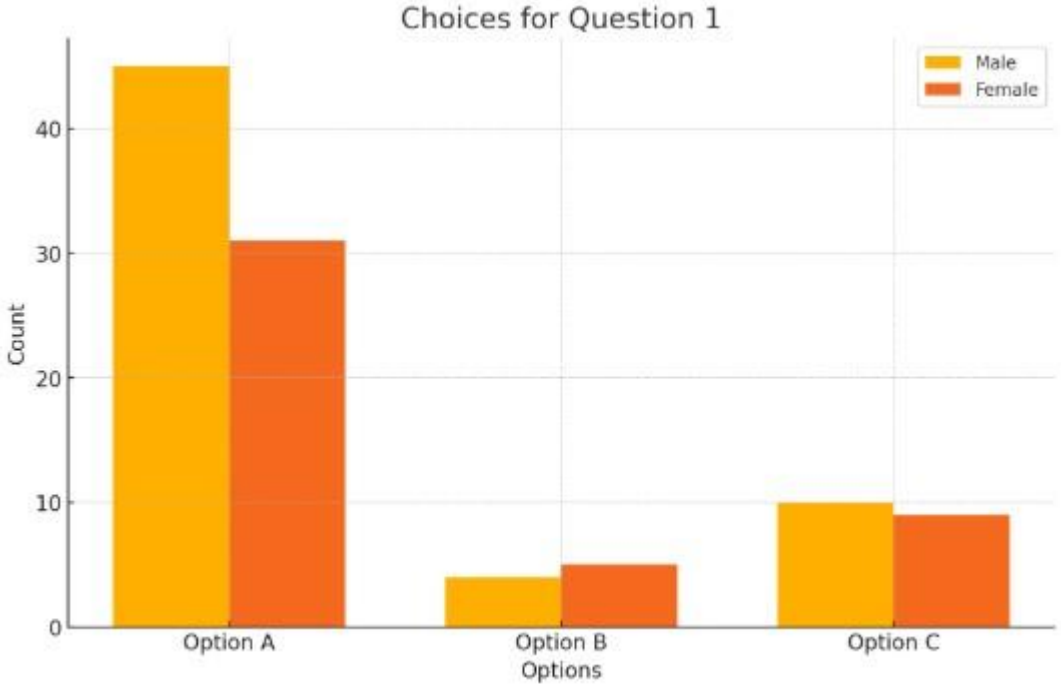
On the other hand, the results are also consistent with participants displaying more risk bearing behaviour when presented with negatively framed questions

RESULTS FROM DIFFERENT VARIABLES

A. Effect of potential to gain a larger amount of money

The survey contains two scenarios which are solely positively framed with no other factors affecting them. However the key difference between them is the potential for significantly larger gains in the second scenario. In the first scenario, participants may secure $5,000 or be risky and have a 50% of making $10,000. However, with the second scenario, participants have the chance to gain much more money at the same amount of risk as the first question, the potential gain increases from a 50% chance of earning $10,000 to a 50% chance of earning $75,000. This set up allows us to observe any changes to risk tolerance or decision making which is affected by the increased amount of money that can now be gained.

Fig 5 shows us the number of males and females who chose each option for the positively framed scenario discussed in table 1.



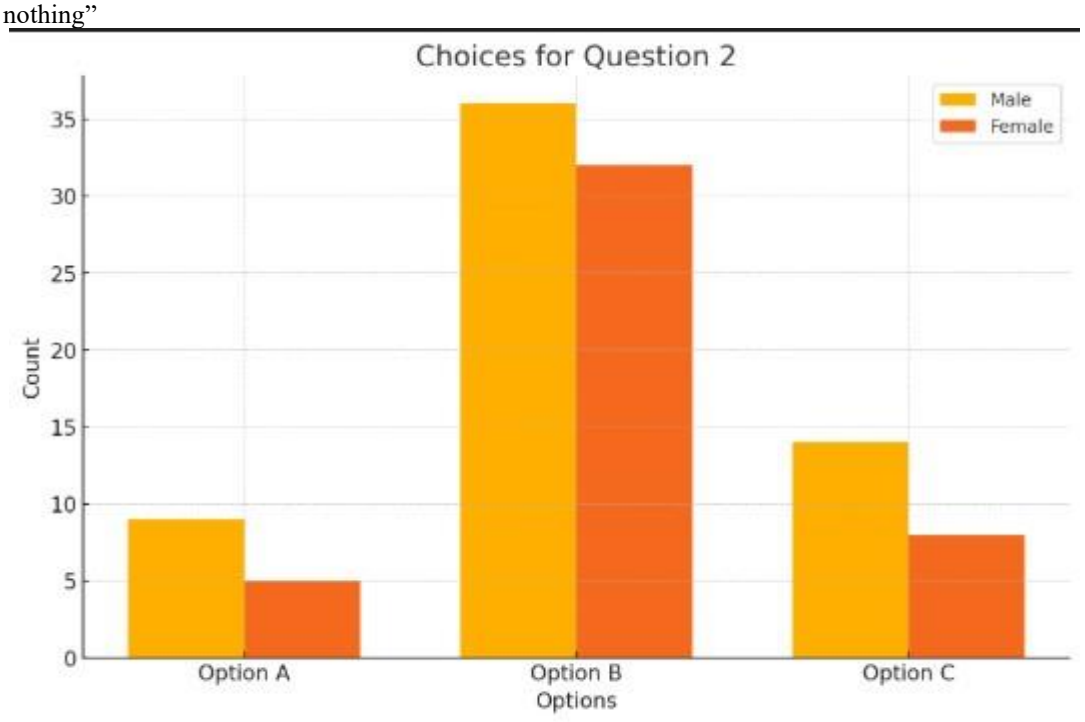
As previously stated, a majority of participants choose option A which in this case is the risk averse option due to the certain gain of $5,000. Significantly lower number of participants chose options B or C displaying very low risk tolerance for a lower sum of money

Fig 6 shows us a bar graph which shows the responses to the question: "You are faced with several investment decisions. These are the expected outcomes: which option do you pick?

Option A: You have a 50% chance of gaining $75,000 and a 50% chance of gaining nothing.

Option B: You have a 100% chance of gaining $30,000.

Option C: You have a 75% chance of gaining $50,000 and a 25% chance of gaining nothing"



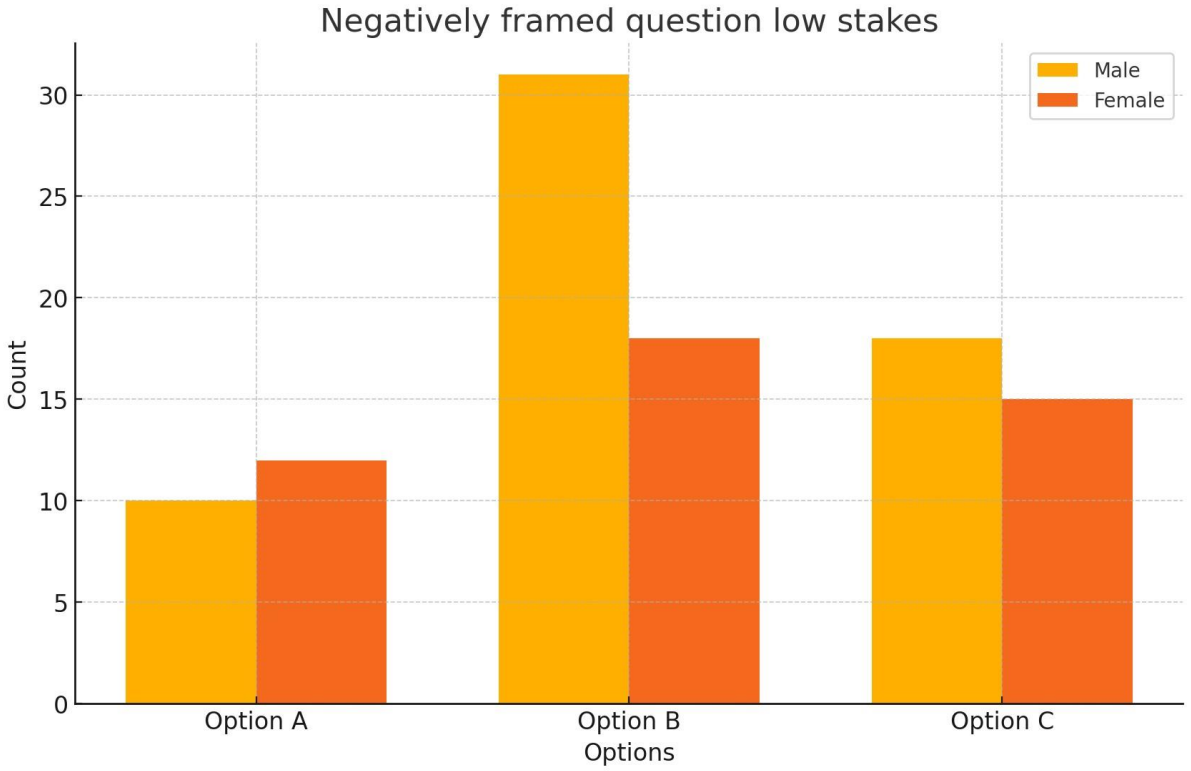
In this question, Option B is the risk averse option. Similarly to the responses to the first question, most participants chose the risk averse option in this scenario, but compared to the first, there is an increase in the number of participants who chose options C and B.

There is an 11.84% decrease in the number of participants who chose the risk averse option, and chose the riskiest or moderate risk option instead when the number of returns which could be gained were increased. P value for the Chi Square test of the second question is 8.38557481762533E-11, which shows significant preference for the risk averse option however it is greater than the P value found for the test for the former scenario with lower stakes. This shows us that whilst the majority still show limited tolerance for risk in a positively framed scenario, if there is a greater potential for earning, few more participants exhibit a higher tolerance for risk. While most remain risk-averse, preferring guaranteed outcomes, a small portion is willing to gamble when the reward is sufficiently high to justify the risk. This insight is crucial for understanding financial decision-making and can inform strategies for designing financial products or policies that align with consumer behavior.

B. The effect the potential to lose greater amount of money has on risk tolerance

To study the impact of the potential to lose greater amounts of money on risk tolerance and decision making, we presented similar negatively framed scenarios to participants with the sole difference being the amount of money the participant has a chance to lose. Comparing option choices between the 2 scenarios can highlight the effect that the potential to lose a greater amount of money can have on risk tolerance.

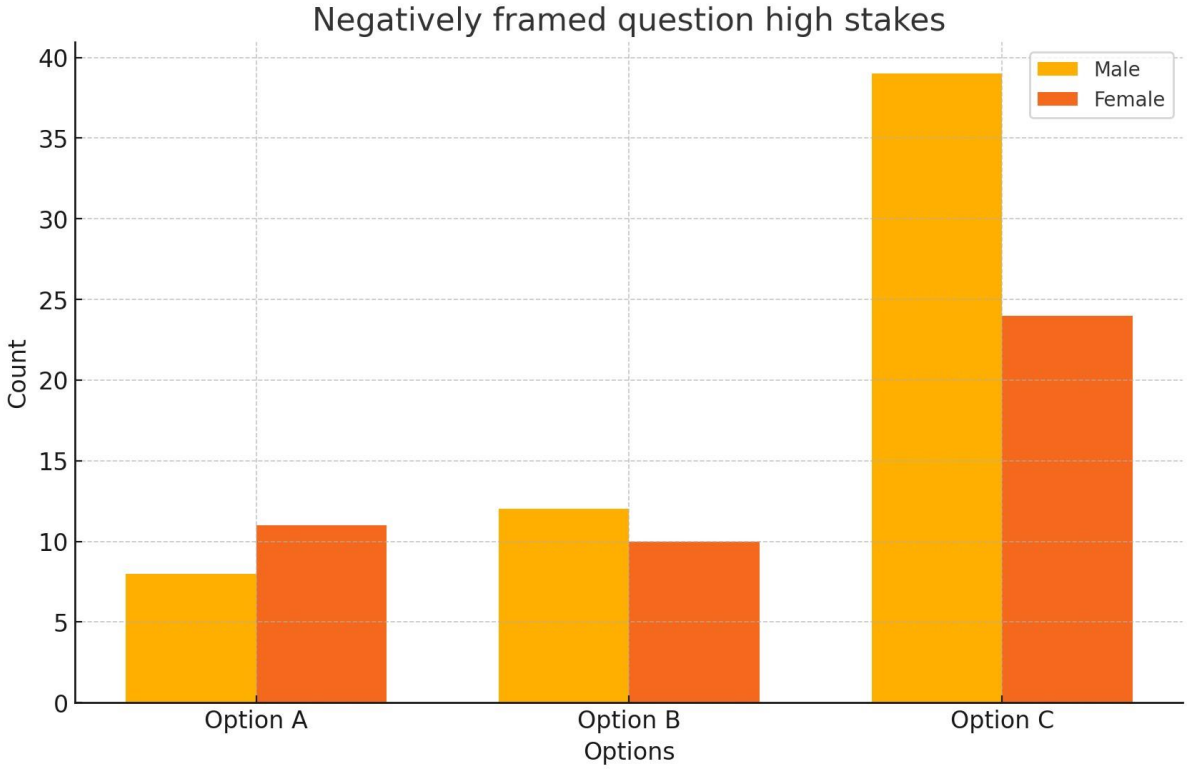
Fig 7 shows the bar graph of responses to a negatively framed scenario from the survey.



In this scenario, participants were told that their investments are going down in value and they have the choice of 3 options. Option A would give them a 100% chance of losing $5,000, option B would mean a 50% chance of losing $10,000 and a 50% chance of losing nothing and finally option C would mean a 75% chance of losing $7,500 and a 25% chance of losing nothing.

The P value of significance for the Chi square test for this scenario's responses was equal to 0.00490594427226846, which shows a clear preference for one option out of three. In this case it was option B, which was the riskiest option available. Therefore, it is already observable that a negatively framed scenario can increase risk bearing behaviour; More people are more willing and able to take more risks when faced with a negatively framed scenario.

Fig 8 shows the bar graph for the second negatively framed scenario, where the potential loss of money is much greater than scenario 1.



This scenario is exactly identical to the last, but the amount that could be lost by participants is much greater. Option A would lead to losing %30,000 instead of $,5000, Option B would give them a 50% chance of losing $75,000 instead of
$10,000 and Option C would give them a 75% chance of losing $50,000

The glaring difference is the significant difference between the two graphs is the number of participants who chose option C in the second scenario.
The P value gained from the Chi square test of independence for this scenario was
2.69E-08, which means that there was a significant preference since P<0.05

The two bar graphs highlight how individuals' risk tolerance changes when financial decisions are framed as losses, depending on the stakes involved. In the low-stakes scenario, where participants faced potential losses of $5,000, the riskiest option, Option B (a 50% chance of losing $10,000 or nothing), was the most popular choice. This indicates that many participants were willing to take significant risks to avoid a certain or partial loss, demonstrating a preference for high-risk, high-reward outcomes at lower stakes. In contrast, in the high-stakes scenario, involving potential losses of $30,000, the most popular choice was Option C (a 75% chance of losing $50,000 and a 25% chance of losing nothing), which involves less risk than Option B. This shift suggests that as the stakes increase, participants become more cautious, balancing the desire to avoid a guaranteed loss with a preference for moderate risk over extreme risk. These patterns align with prospect theory, where individuals tend to exhibit higher risk-seeking behavior for smaller losses but moderate their risk-taking as potential losses become more substantial.

C. The effect the time period (Longer and shorter durations of time before return on investments) has on risk tolerance

One of the variables that might affect risk tolerance that this survey aimed to test was the duration of time it takes to earn returns from an investment. Participants were given a scenario with two options: Option A, a guaranteed $500,000 in 12 months (risk averse choice), and Option B, a 50% chance of $500,000 in 3 months or a 50% chance of making nothing (risk seeking choice). This scenario was designed to isolate the duration of time before receiving returns as a variable to observe its impact on participants' risk tolerance and observe whether a shorter time frame

would encourage participants to be riskier. It is positively framed so the expectation would be that more participants exhibit risk averse behaviour but choosing option B would suggest that the participants who made that choice, did so based off the guarantee of faster returns and that this guarantee led to them increasing tolerance for risk

Despite the shorter timeframe associated with Option B, the majority of participants (86 out of 104) chose the guaranteed Option A, indicating a preference for certainty even when faced with the possibility of achieving the same financial outcome in significantly less time. Additionally, the P value calculated for the Chi square test of independence for this scenario was 2.59E-11. $P<0.05$ indicates that there was a clear statistical preference for one of the options, which means that although there was a possibility of making returns on investment in a shorter time span, the risk associated with it wasn't worth it for most participants

These findings show that time duration alone may not strongly determine changes in risk tolerance, since most people maintained a risk aversion. That means the allure of faster returns may not compare to the psychological value of certainty of outcome.

This insight further reinforces that time and certainty have to be taken into account in defining financial decisions, implying investment strategy design and client risk management advice.

D. The effect external news and optimism about an investment has on risk tolerance:

This scenario was designed to isolate the effect of external positive news and optimism about an investment on participants' risk tolerance. By framing the question around a recent upward fluctuation in NVIDIA's stock price (+12% in a month) and a bullish market sentiment, the goal was to assess whether optimism about a specific investment would encourage participants to take on more risk. The results showed that 39 participants chose Option A (investing in non-volatile bonds), 32 participants chose Option B (investing solely in NVIDIA with a 50% chance of a $25,000 gain), and 33 participants chose
Option C (a mix of NVIDIA stock and bonds with a 75% chance of gaining
$17,000). The distribution of responses suggests a fairly balanced split across the options, with a slight preference for the risk-averse choice of guaranteed bonds (Option A). The relatively equal split among the three options indicates that positive news about an investment does encourage some participants to take more risks, although not to an extreme extent.

The Chi-Square test yielded a p-value of 0.525, indicating no statistically significant association between the framing of positive news and participants' choices. This result suggests that while optimism about NVIDIA stock influenced a segment of participants to take riskier options (Options B and C), it did not drastically shift overall risk preferences. These findings highlight that while external positive news can increase risk-taking to some degree, participants' inherent caution and preference for security dampens their willingness to fully embrace riskier investment options.

E. The effect making decision with one's own income has of risk tolerance:

Under positive frames -

The first part of the survey was conducted after setting a $150,000 limit for participants. Each one only had that amount of money and would have to make their decision accordingly. Figures 5 and 6 show the decisions participants made in the positively framed scenarios where they were set to gain money through investments although different amounts, and as previously discussed most participants choose the risk averse option.

In later parts of the survey participants were asked to answer the question according to their own incomes to study the impact that making investment decisions with personal income had on risk tolerance. Participants were given similar positively framed scenarios as before but this time the gains were represented as percentages of their total portfolios, where scenario 2 had larger gains on offer to see if this would increase appetite for risk

Fig 9 shows the distribution of male and female responses for the first question, where the potential portfolio gains were framed as 10%, 15%, or 12.5%

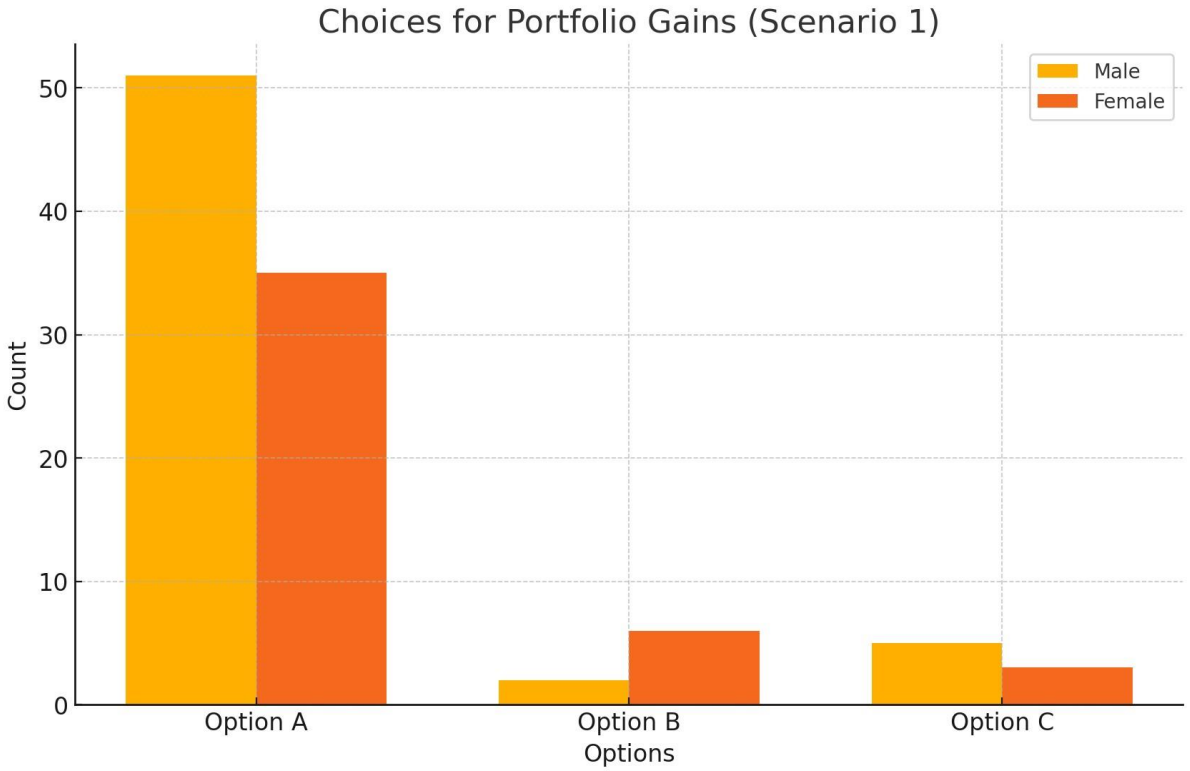
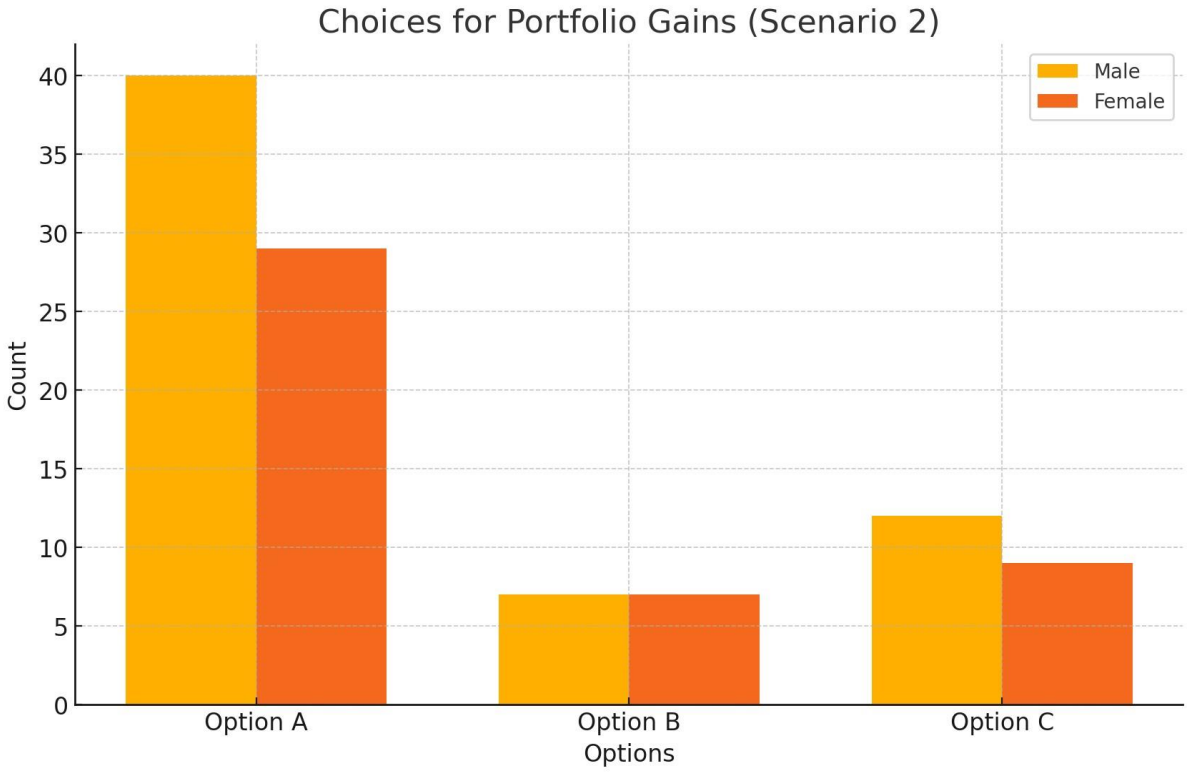


Fig 10 shows the distribution of male and female responses for the second question, where the potential portfolio gains were framed as 10%, 25%, or
15%



(IJTBM) 2025, Vol. No. 15, Issue No. I, Jan-Mar **e-ISSN: 2231-6868 p-ISSN: 2454-468X**

The portfolio scenarios explicitly tied gains to participants' own investments, which likely heightened the psychological cost of losing money and influenced decision-making.

Initially, 84.3% of participants chose Option A, which showed significant aversion to risk, but that percentage dropped to 66.3% in the second scenario where participants had a chance to earn a greater return on investment.

The P value for both scenarios are smaller than 0.05 which indicates a clear preference for one option out of the three however when the amount of money that can be gained is increased, more participants choose the more risk tolerant options although the majority is still risk averse.

When comparing these two scenarios, it becomes evident that participants demonstrate heightened caution when dealing with potential returns tied directly to their own portfolios. The shift toward slightly more risk-taking in Scenario 2, where higher rewards were possible, underscores the impact of potential gain magnitude on decision-making. However, the general preference for certainty in both scenarios reveals a baseline risk aversion. This aligns with prospect theory, where individuals are typically more sensitive to the risk of loss or uncertainty when the stakes feel personal. The data from these scenarios suggest that while participants may take on slightly more risk for higher potential rewards, the attachment to their own money drives them to prioritize security overall.

Comparing these portfolio-based scenarios to the initial bar graphs titled "Choices for Question 1" and "Choices for Question 2" reveals notable differences and similarities. In the initial scenarios, participants faced potential gains framed in absolute dollar amounts rather than percentages of their own investments. This difference in framing led to more risk-taking in the initial scenarios, particularly in Question 1, where Option B (50% chance of gaining $10,000) was the most popular. Conversely, in the portfolio scenarios, most participants opted for the guaranteed gain of Option A. This shift highlights the influence of framing on risk perception; when outcomes are tied to hypothetical or abstract amounts, participants appear more willing to take risks compared to when decisions are tied directly to their own money.

The similarities between the two sets of scenarios emerge when higher rewards are introduced. In the initial Question 2 and the portfolio-based Scenario 2, Option C, which balances moderate risk with potentially significant returns, became a more popular choice. This suggests that participants' willingness to take calculated risks increases as the stakes rise, regardless of whether the framing involves absolute amounts or percentages of their portfolio. However, the portfolio scenarios consistently show a stronger preference for risk-averse behavior overall, emphasizing the emotional and psychological impact of framing gains in terms of participants' own assets.

RESULTS IN TERMS OF DEMOGRAPHICS:

Gender:

In positively framed scenarios, where outcomes were framed as potential gains, men generally displayed higher risk tolerance than women. For example, when presented with options involving guaranteed gains versus probabilistic higher returns (e.g.,
"Option A: You have a 100% chance of gaining $5,000" versus riskier options), a greater proportion of men opted for the riskier options (Option B or C) compared to women. Women, on the other hand, were more likely to select the guaranteed gain, indicating a higher level of risk aversion.

This trend aligns with previous research suggesting that women often exhibit more cautious behavior when faced with financial decisions involving potential rewards. The survey also demonstrated that men were more likely to choose options with higher variability and potential for larger rewards, reflecting a greater willingness to take risks for higher returns.

Negatively framed scenarios, where outcomes were presented as potential losses, elicited a more nuanced response. For example, in the scenario **"Option A: You have a 100% chance of losing 10% of your total investment portfolio,"** women showed a stronger preference for the certain loss (Option A), whereas men were more inclined to choose probabilistic options (Option B or C), which involved the possibility of avoiding a loss entirely.

This indicates that men are not only more risk-tolerant in positively framed situations but also in negatively framed ones. They are more willing to take risks to potentially avoid losses, whereas women tend to gravitate toward certainty, even in loss scenarios.

The framing of scenarios—positive versus negative—amplified these gender differences. In positively framed situations, the guaranteed options were more appealing to both genders, but especially to women. Conversely, in negatively framed scenarios, the possibility of avoiding losses seemed to entice men to take more risks, while women maintained a cautious approach.

This demonstrates that framing significantly influences decision-making across genders. Women tend to adhere to risk-averse strategies in both positive and negative contexts, whereas men's higher risk tolerance persists across frames.

The survey findings suggest that gender plays a critical role in financial decision-making. Men's higher risk tolerance may make them more likely to pursue investments with higher potential rewards, but also with greater variability and potential losses. Women's preference for certainty may safeguard them from significant losses but could also limit their ability to capitalize on opportunities with higher potential returns.

These insights underscore the importance of tailoring financial advice and decision-making frameworks to account for gendered differences in risk tolerance. Financial advisors and educators should consider these tendencies when guiding individuals in making balanced decisions that align with their financial goals and comfort levels.

CONCLUSION

This study aimed to investigate the framing effect in a financial context and explore how it influences risk tolerance in investment decisions.

In conjunction with similar studies conducted in different industries on the framing effect, the results of our study are in line with previous findings which state that positive framing will lead to risk averse behaviour and a negative frame will lead to greater risk tolerance. We also came to the similar conclusion as our study finds that positive framing of an investment opportunity will lead to a risk averse decision making and most probably lead to a low risk choice, and vice versa.

Participants demonstrated a strong preference for risk-averse choices when scenarios were positively framed, as seen in their inclination toward guaranteed returns. Conversely, negatively framed scenarios led to more risk-seeking behavior, with participants opting for probabilistic outcomes to avoid certain losses. External positive news and optimism had a nuanced impact, encouraging some participants to take more risks but not drastically altering overall preferences. The results also showed that time duration and personal financial circumstances played roles in shaping decisions, though they did not completely override the influence of framing.

The study was conducted under controlled conditions, such as providing participants with a fixed initial capital, to ensure that decisions were primarily influenced by framing rather than external factors like wealth disparities. However, this research is not without limitations. The sample size, while diverse, may not fully represent broader demographics, and the hypothetical nature of the scenarios might not perfectly capture real-world decision-making. Additionally, participants' self-reported financial literacy and income may introduce biases

There are several implications of these findings in a real world context. Understanding how framing influences risk tolerance can help financial advisors, policymakers, and financial institutions design better tools and frameworks for guiding clients. For instance, framing financial products or investment opportunities in ways that align with clients' goals could lead to better outcomes and reduce the likelihood of impulsive or irrational decisions. Policymakers can also leverage these insights to frame public financial education campaigns more effectively, ensuring that individuals make informed decisions about investments, savings, and retirement planning.

Future research could build on these findings by exploring the framing effect in more dynamic, real-world environments, incorporating emotional factors, and examining how framing interacts with other cognitive biases in financial decision-making. By addressing these areas, further studies could deepen our understanding of how to mitigate the negative impacts of framing and support more rational decision-making in financial contexts.

ACKNOWLEDGEMENTS

This paper is an independent work, separate from any school curriculum or qualification. It was done in the pursuit of higher education.

Writing this paper all the way from writing the introduction to conducting the research and the survey all the way to writing my conclusion has been an amazing academic journey and is something I would love to do again.

BIBLIOGRAPHY

1. Hayes, A. (2024, April 22). *Rational Behavior: Definition and Example in Economics*. Investopedia. https://www.investopedia.com/terms/r/rational-behavior.asp#:~:text=The%20assumption%20of%20rational%20behavior,an%20activity%20are%20behaving %20rationally.
2. Mheslinga. (2022, June 1). Behavioral economics, explained. *University of Chicago News*. https://news.uchicago.edu/explainer/what-is-behavioral-economics
3. Majaski, C. (2024, May 15). *What Is the Invisible Hand in Economics?* Investopedia. https://www.investopedia.com/terms/i/invisiblehand.asp
4. Kahneman, D., & Tversky, A. (1979). Prospect Theory: An Analysis of Decision under Risk. *Econometrica*, *47*(2), 263–291. https://doi.org/10.2307/1914185
5. Ziegler, F.V., Tunney, R.J. Who's been framed? Framing effects are reduced in financial gambles made for others. *BMC Psychol* 3, 9 (2015). https://doi.org/10.1186/s40359-015-0067-2
6. Todd, T. (2019). *Behavioral economics and the impact of message framing on financial planning intentions*. https://krex.k-state.edu/server/api/core/bitstreams/2d5d9769-6696-46c7bdba-a424a163ddd4/content
7. Seo, M.-G., Goldfarb, B., & Barrett, L. F. (2010). Affect and the Framing Effect within Individuals over Time: Risk Taking in a Dynamic Investment
8. Simulation. *Academy of Management Journal*, *53*(2), 411–431. https://doi.org/10.5465/amj.2010.49389383
9. Tversky, A., & Kahneman, D. (1986). Rational Choice and the Framing of Decisions. *The Journal of Business*, *59*(4), S251–S278. http://www.jstor.org/stable/2352759
10. Kirchler, E., Maciejovsky, B., & Weber, M. (2004). *Framing Effects, Selective Information and Market Behavior - An Experimental Analysis* - (pp. 1–36)
11. [PDF *Framing Effects, Selective Information and Market Behavior - An Experimental Analysis* -]. https://madoc.bib.uni-mannheim.de/278/1/weber_papers06.pdf