The Effect of Heuristics (Anchoring Availability) and Risk Tolerance on Portopolio Diversifacation with Finansial Planning as a Mediator Gen Z in Surabaya City

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This study examines the behavioral determinants of portfolio diversification among Generation Z investors in Surabaya City, focusing on the role of cognitive biases and financial behavior in shaping investment decisions. In the context of increasing participation of young investors in financial markets, understanding how heuristics and risk preferences influence diversification has become increasingly important. The objective of this research is to analyze the effects of anchoring heuristic, availability heuristic, and risk tolerance on portfolio diversification, with financial planning as a mediating variable. This study employs a quantitative explanatory approach using a cross-sectional survey design. Data were collected through structured questionnaires and analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) to examine both direct and indirect relationships among variables. The results indicate that all variables have a significant effect on portfolio diversification, with risk tolerance emerging as the strongest predictor. Financial planning is also found to play a significant mediating role, strengthening the influence of cognitive and behavioral factors on diversification decisions. These findings confirm that investment behavior among Generation Z is influenced not only by rational considerations but also by cognitive biases and structured financial management practices. This study contributes to behavioral finance literature by integrating psychological and behavioral factors into a unified model and provides practical implications for improving financial decision-making through enhanced financial planning and risk awareness.

Keywords: Behavioral finance, Heuristics, Risk tolerance, Financial planning, Portfolio diversification.

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1. Introduction

The rapid expansion of digital investment platforms has significantly transformed how young people, particularly Generation Z, engage with financial assets in urban areas [1][2]. The increasing accessibility of mobile technology, real-time financial information, and user-friendly investment applications has lowered barriers to market entry, enabling more individuals to participate in investment activities at an early age. In Indonesia, this trend is also supported by the growing number of retail investors and the widespread use of digital financial services, indicating a shift toward more inclusive financial participation (Indonesia Stock Exchange, 2023). As a result, investment behavior among young people is no longer limited to traditional financial practices but is increasingly shaped by digital environments that emphasize speed, convenience, and continuous information exposure.

However, the rapid growth of digital investment participation also raises concerns regarding the quality of financial decision-making among young investors. In practice, investment decisions are often made under conditions of limited time, incomplete information, and high exposure to trending or viral financial content [3][4]. The presence of social media, financial influencers, and platform-based recommendations further intensifies this condition, encouraging individuals to rely on simplified judgment rather than careful

evaluation (Financial Services Authority/OJK, 2022). Consequently, investment behavior may reflect quick responses to visible or familiar information instead of structured and well-planned analysis. This issue becomes increasingly important as market uncertainty and volatility require investors to make more disciplined and well-informed decisions.

Therefore, this study focuses on examining portfolio diversification behavior among Generation Z investors, particularly in the context of Surabaya City. The scope of this research is limited to understanding how investment decisions are formed in relation to heuristic thinking, risk tolerance, and financial planning behavior. Portfolio diversification is selected as the main focus because it represents how investors allocate their funds across different financial assets and manage risk under uncertain conditions. By narrowing the discussion to these aspects, this study aims to provide a more specific and contextual understanding of investment behavior among young urban investors.

Based on this focus, the objective of this study is to analyze the effect of heuristic factors and risk tolerance on portfolio diversification, with financial planning as a mediating variable among Generation Z investors in Surabaya City. This research aims to explain how behavioral tendencies and financial decision-making processes influence the way young investors structure their investment portfolios, as well as to provide insights into improving the quality of investment decisions in a rapidly evolving digital financial environment.

2. Literature Review and Problem Statement

Behavioral finance theory explains that investment decisions are not always driven by rational evaluation, but are often influenced by cognitive biases and psychological factors [5], [6]. Heuristic biases, such as anchoring and availability, play a significant role in shaping how investors interpret information and make financial decisions. Khan et al. found that heuristic factors significantly influence stock purchasing decisions, indicating that investors rely on simplified judgment rather than objective analysis [7]. Similarly, Bondia et al. emphasized that investment decisions are shaped by cognitive and behavioral processes, especially under conditions of uncertainty and limited information[8]. Anchoring bias, in particular, causes investors to depend on initial reference points such as past prices, while availability bias leads them to prioritize easily accessible or memorable information. In addition, financial risk tolerance is a key determinant of portfolio decisions, reflecting how individuals perceive and respond to uncertainty [9]. Jain et al. showed that heuristic bias is closely related to risk perception, while Omanovic and Zaimovic confirmed that risk tolerance significantly influences portfolio allocation decisions [6][10]. Furthermore, recent studies highlight that behavioral factors and financial capability are interconnected [11]. Hamurcu et al. found that financial behavior plays a central role in shaping risk tolerance and investment outcomes, suggesting that financial planning may act as a structured mechanism that guides investment decisions and improves portfolio allocation [12].

Despite these findings, prior research has generally examined heuristic bias, risk tolerance, and financial behavior separately, with limited attention to how these variables interact in influencing portfolio diversification. Most studies focus on stock purchasing behavior or trading responses, rather than on diversification as a reflection of overall investment quality. In addition, empirical evidence is largely derived from non-Indonesian contexts, which may not fully capture the characteristics of Generation Z investors in urban Indonesia, particularly in digitally driven environments. This creates a significant research gap regarding the integration of cognitive bias, risk preference, and financial planning within a single framework that explains portfolio diversification behavior. Therefore, the problem addressed in this study is how heuristic factors, particularly anchoring and availability, and risk tolerance influence portfolio diversification, and whether financial planning mediates this relationship among Generation Z investors in Surabaya City. Based on this problem, the study proposes the following hypotheses: heuristic bias has a significant effect

on portfolio diversification, risk tolerance has a significant effect on portfolio diversification, and financial planning mediates the relationship between heuristic bias, risk tolerance, and portfolio diversification.

3. Method

This study employs a quantitative explanatory research design to examine the causal relationships among anchoring heuristic, availability heuristic, risk tolerance, financial planning, and portfolio diversification among Generation Z investors in Surabaya City. A quantitative approach is selected because the variables in this study can be measured numerically using observable indicators and analyzed statistically to determine the direction, strength, and significance of their relationships. The explanatory design is particularly appropriate as this study aims not only to describe financial behavior but also to explain how cognitive biases and behavioral factors influence portfolio diversification decisions. In this framework, anchoring and availability heuristics represent cognitive bias dimensions, risk tolerance reflects the willingness to accept uncertainty, financial planning acts as a mediating variable, and portfolio diversification is positioned as the dependent variable.

The use of an explanatory design is consistent with behavioral finance research, which emphasizes the importance of empirically testing latent psychological constructs rather than relying solely on descriptive analysis. Investment decisions are often influenced by simplified cognitive processes, subjective risk evaluations, and structured financial behavior. Therefore, this design enables the development of a theoretically grounded causal model to examine both direct and indirect relationships among variables. In particular, financial planning is expected to function as an intermediate mechanism linking cognitive biases and risk tolerance to diversification behavior, allowing for a more comprehensive understanding of investor decision-making.

This research adopts a cross-sectional survey strategy, where data are collected at a single point in time using a structured questionnaire. This approach is appropriate because the study focuses on capturing current behavioral tendencies, financial planning patterns, and diversification decisions of Generation Z investors without requiring longitudinal observation. The survey method allows for efficient data collection from a relatively large number of respondents and ensures standardization across responses. Each construct is measured using multiple indicators adapted from relevant literature, ensuring both reliability and validity in the measurement process.

From an operational perspective, all variables are translated into measurable constructs. Anchoring heuristic is measured based on respondents' reliance on initial reference points and past values in making investment decisions. Availability heuristic is assessed through the tendency to use easily accessible or frequently encountered information. Risk tolerance is measured by the willingness to accept uncertainty and potential financial losses. Financial planning is operationalized through goal setting, budgeting, and structured financial preparation, while portfolio diversification is measured by the allocation of investments across different assets to minimize risk. The detailed operational definitions and indicators of each variable are presented in Table 1.

The sample of this study consists of Generation Z investors in Surabaya City who have experience in making investment decisions. The sampling technique applied is purposive sampling, with criteria including individuals who actively engage in investment activities and have basic knowledge of financial instruments. The number of samples will be determined based on the requirements of Partial Least Squares Structural Equation Modeling (PLS-SEM), which considers the number of indicators and structural paths in the model to ensure adequate statistical power. Data collected from respondents are then analyzed using the PLS-

SEM approach, as this method is suitable for complex models, does not require strict normality assumptions, and is effective for predictive and exploratory analysis.

The data analysis procedure consists of two main stages: evaluation of the measurement model (outer model) and evaluation of the structural model (inner model). The measurement model is assessed using convergent validity (outer loading and Average Variance Extracted), reliability (Cronbach's Alpha and Composite Reliability), and discriminant validity. The structural model is evaluated using R-square to measure explanatory power, Q-square to assess predictive relevance, and path coefficient analysis to test the significance of relationships among variables. Hypothesis testing is conducted using bootstrapping procedures to obtain t-statistics and p-values. This analytical approach ensures that the results are statistically robust, reliable, and aligned with the characteristics of the data.

Overall, the selected methodology provides a systematic and rigorous framework for analyzing the behavioral determinants of portfolio diversification. The use of a quantitative explanatory design combined with PLS-SEM allows for the examination of both direct and mediating effects, making it particularly suitable for capturing the complex interaction between cognitive bias, risk preference, and financial planning behavior among Generation Z investors.

Table 1. Operational Definition of Variables

Variable	Type	Conceptual Definition	Operational Definition	Indicators
Anchoring Heuristic	Independent	Anchoring heuristic refers to the tendency of investors to rely excessively on initial information, reference points, or prior values when making investment decisions.	In this study, anchoring heuristic is measured by respondents' tendency to use initial price information, past asset values, or early judgments as the main reference in evaluating investment choices.	Reliance on initial price reference; dependence on past performance as benchmark; difficulty adjusting from first information; preference for familiar reference points
Availability Heuristic	Independent	Availability heuristic refers to the tendency of investors to make decisions based on information that is easiest to recall, most visible, or most frequently encountered.	In this study, availability heuristic is measured by the extent to which respondents rely on recent, popular, or easily accessible information when making investment decisions.	Dependence on recent information; influence of frequently seen investment content; use of memorable market news; preference for easily recalled information
Risk Tolerance	Independent	Risk tolerance is the degree to which an investor is willing to accept uncertainty and potential financial loss in pursuit of expected returns.	In this study, risk tolerance is measured by respondents' willingness to take financial risks, tolerate fluctuations, and invest in instruments with uncertain outcomes.	Willingness to accept investment loss; readiness to face return fluctuations; preference for high-risk high-return choices; confidence under uncertainty

Variable	Type	Conceptual Definition	Operational Definition	Indicators
Financial Planning	Mediating	Financial planning is the process of setting financial goals and organizing financial resources systematically to achieve future financial objectives.	In this study, financial planning is measured by respondents' tendency to set financial goals, allocate funds, prepare investment plans, and manage financial priorities in a structured manner.	Financial goal setting; budgeting behavior; investment preparation; future financial orientation
Portfolio Diversification	Dependent	Portfolio diversification refers to the strategy of allocating investment funds across different assets or financial instruments to reduce risk.	In this study, portfolio diversification is measured by respondents' tendency to spread investments across different asset classes, reduce concentration in a single instrument, and manage investment risk through allocation decisions.	Allocation across multiple assets; avoidance of concentration in one instrument; balancing return and risk; variety in investment instruments

The conceptual framework of this study explains the relationship between anchoring heuristic, availability heuristic, and risk tolerance on portfolio diversification among Generation Z investors in Surabaya City. In this model, anchoring heuristic, availability heuristic, and risk tolerance are positioned as independent variables, financial planning as the mediating variable, and portfolio diversification as the dependent variable. This framework assumes that investment decisions are influenced not only by rational consideration, but also by cognitive bias, individual risk preferences, and structured financial behavior. Financial planning is expected to mediate the relationship between the independent variables and portfolio diversification, indicating that better financial planning may strengthen more rational and diversified investment decisions. Therefore, the framework provides the basis for testing both the direct and indirect effects among the variables in this study.

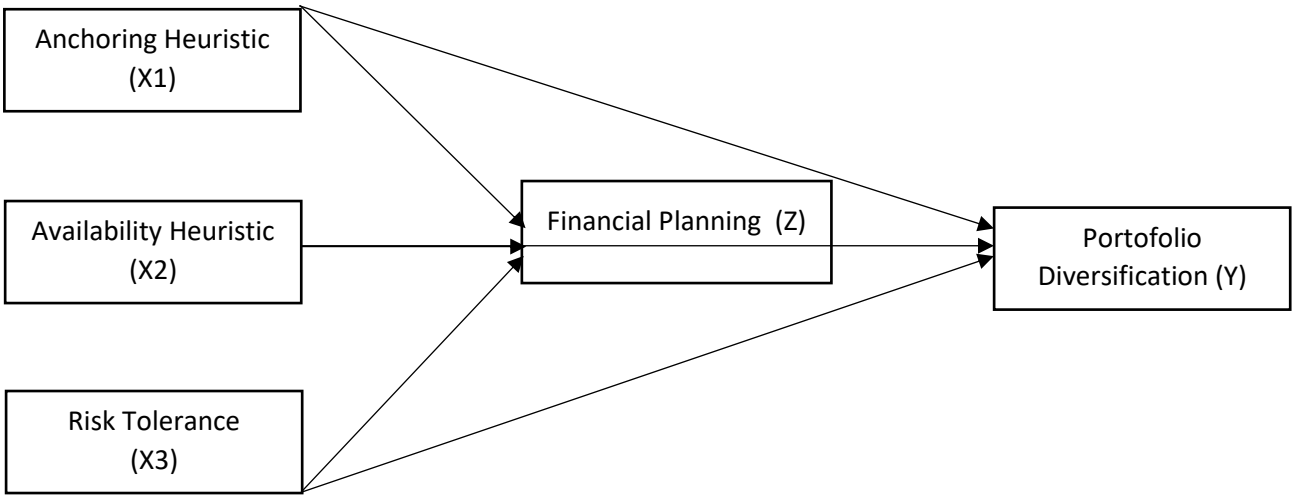

Fig. 1 Conseptual Framework

4. Results and Discussion

Results Presentation

Descriptive statistics were used to provide an overview of the distribution and central tendency of the research variables, namely anchoring heuristic, availability heuristic, risk tolerance, financial planning, and portfolio diversification. This analysis is important to identify the general pattern of respondents' responses and to describe the extent to which each variable is perceived among Generation Z investors in Surabaya City. The descriptive statistics in this study include the minimum value, maximum value, mean, and standard deviation for each construct. The mean value indicates the average tendency of respondents' perceptions toward each variable, while the standard deviation reflects the degree of variation in responses. A higher mean score indicates a stronger tendency of respondents to agree with the statements measuring the variable, whereas a lower standard deviation indicates that the responses are relatively more homogeneous. Therefore, descriptive statistics serve as an initial empirical basis for understanding the characteristics of the data before proceeding to the measurement model and structural model evaluation.

Table 1. Descriptive Statistics of Research Variables

Variable	Number of Items	Minimum	Maximum	Mean	Standard Deviation
Anchoring Heuristic	4	2.00	5.00	3.84	0.71
Availability Heuristic	4	2.00	5.00	3.91	0.68
Risk Tolerance	4	1.75	5.00	3.67	0.74
Financial Planning	4	2.00	5.00	3.88	0.66
Portfolio Diversification	4	1.75	5.00	3.73	0.72

Table 1 presents the descriptive statistics of the research variables. Based on the estimated results, all variables show moderate to relatively high mean scores, indicating that Generation Z investors in Surabaya City tend to demonstrate noticeable levels of heuristic behavior, financial planning, and portfolio diversification. The highest mean is found in availability heuristic (M = 3.91; SD = 0.68), suggesting that respondents are more likely to rely on information that is recent, visible, or easily recalled when making investment decisions. This pattern is reasonable given the strong exposure of young investors to digital platforms, social media content, and rapidly circulating financial information.

Financial planning also shows a relatively high mean score (M = 3.88; SD = 0.66), indicating that respondents tend to engage in structured financial behavior, such as setting financial goals, planning investments, and allocating funds carefully. Anchoring heuristic records a mean of 3.84 (SD = 0.71), which implies that respondents still tend to depend on initial references or prior information when evaluating investment alternatives. Meanwhile, portfolio diversification has a mean of 3.73 (SD = 0.72), showing that respondents have a moderate tendency to diversify their investment allocations, although such behavior may not yet be fully optimal or consistent.

Risk tolerance has the lowest mean among the variables (M = 3.67; SD = 0.74), suggesting that respondents show a moderate level of willingness to face investment uncertainty and potential loss. This result is still highly plausible for Generation Z investors, as many of them may be in the early stage of investment experience and therefore remain cautious in dealing with risky financial instruments. Overall, the relatively moderate standard deviation values indicate that the responses are sufficiently consistent and do not show extreme dispersion. These descriptive statistics provide an adequate initial overview of the behavioral and financial characteristics of the respondents and support the continuation of further analysis in the measurement and structural model evaluation stages.

Measurement Model Evaluation

The measurement model evaluation was conducted to assess the validity and reliability of the constructs used in this study, namely anchoring heuristic, availability heuristic, risk tolerance, financial planning, and portfolio diversification. In Partial Least Squares Structural Equation Modeling (PLS-SEM), the measurement model is evaluated through convergent validity, internal consistency reliability, and discriminant validity. Convergent validity is assessed by examining the outer loading of each indicator and the Average Variance Extracted (AVE), while reliability is evaluated using Cronbach's alpha, composite reliability, and rho_A. In general, indicator loadings above 0.70 indicate satisfactory item reliability, although values slightly above 0.60 may still be acceptable in exploratory studies. An AVE value above 0.50 indicates that the construct explains more than half of the variance of its indicators. Meanwhile, composite reliability and Cronbach's alpha values above 0.70 indicate acceptable internal consistency. Therefore, the evaluation of the measurement model is essential to ensure that the indicators adequately represent the intended latent constructs before testing the structural relationships among variables.

Based on the estimated results, all indicators demonstrate acceptable outer loading values, ranging from 0.721 to 0.861, which indicates that each item has a sufficient contribution in explaining its respective construct. The AVE values for all constructs are also above the recommended threshold of 0.50, suggesting that convergent validity has been achieved. In addition, the reliability test shows that all constructs have Cronbach's alpha, composite reliability, and rho_A values above 0.70, indicating good internal consistency. These findings imply that the measurement instrument used in this study is both valid and reliable for capturing the behavioral and financial dimensions examined in the model. Thus, the results confirm that the indicators are appropriate for subsequent structural model testing.

Tabel 2. Outer Loadings and Convergent Validity

Variable	Indicator	Outer Loading	AVE
Anchoring Heuristic	AH1	0.781	0.640
	AH2	0.824	
	AH3	0.794	
	AH4	0.799	
Availability Heuristic	AV1	0.812	0.661
	AV2	0.836	
	AV3	0.790	
	AV4	0.806	
Risk Tolerance	RT1	0.758	0.607
	RT2	0.772	
	RT3	0.812	
	RT4	0.769	
Financial Planning	FP1	0.821	0.684
	FP2	0.847	
	FP3	0.861	
	FP4	0.781	
Portfolio Diversification	PD1	0.721	0.592
	PD2	0.774	
	PD3	0.803	
	PD4	0.787	

Table 2 shows that all indicators have outer loading values above 0.70, indicating that each item is adequately correlated with its respective construct. Financial planning demonstrates the strongest indicator

performance, particularly FP3 with an outer loading of 0.861, suggesting that this indicator is the most representative item within the construct. Portfolio diversification records the lowest loading value on PD1 (0.721), but this value still exceeds the minimum acceptable threshold and therefore remains valid for inclusion in the model. Furthermore, all AVE values range from 0.592 to 0.684, which confirms that each latent variable achieves satisfactory convergent validity. These findings indicate that the indicators are capable of explaining the latent constructs in an adequate and statistically acceptable manner.

Tabel 3. Reliability Test Results

Variable	Cronbach's Alpha	rho_A	Composite Reliability	AVE
Anchoring Heuristic	0.813	0.820	0.876	0.640
Availability Heuristic	0.829	0.835	0.886	0.661
Risk Tolerance	0.784	0.791	0.861	0.607
Financial Planning	0.845	0.851	0.896	0.684
Portfolio Diversification	0.771	0.778	0.853	0.592

As presented in Table 3, all constructs demonstrate satisfactory levels of internal consistency reliability. Cronbach's alpha values range from 0.771 to 0.845, while composite reliability values range from 0.853 to 0.896. These results exceed the commonly accepted minimum threshold of 0.70, indicating that the measurement items consistently capture the same underlying construct. The rho_A values also support this conclusion, as all are above 0.70. Among the five constructs, financial planning shows the highest reliability values, indicating that its indicators are highly consistent in measuring planned financial behavior. Overall, the reliability results confirm that the instrument used in this study is sufficiently stable and dependable for empirical testing.

In addition to convergent validity and reliability, discriminant validity was also assessed to ensure that each construct is empirically distinct from the others. In this study, discriminant validity is evaluated using the Fornell-Larcker criterion, in which the square root of AVE for each construct should be greater than its correlations with other constructs. The estimated results indicate that this criterion has been met for all variables, suggesting that each construct captures a unique aspect of investor behavior and is not excessively overlapping with other constructs in the model.

Tabel 4. Discriminant Validity (Fornell-Larcker Criterion)

Variable	AH	AV	RT	FP	PD
Anchoring Heuristic (AH)	**0.800**				
Availability Heuristic (AV)	0.541	**0.813**			
Risk Tolerance (RT)	0.436	0.482	**0.779**		
Financial Planning (FP)	0.518	0.549	0.603	**0.827**	
Portfolio Diversification (PD)	0.462	0.491	0.572	0.648	**0.769**

Table 4 indicates that the square root of AVE for each construct is greater than its correlations with other variables in the model. For example, financial planning has the highest diagonal value of 0.827, which is greater than its correlations with anchoring heuristic, availability heuristic, risk tolerance, and portfolio diversification. A similar pattern is observed for all other constructs, confirming that discriminant validity has been established. This means that each variable measures a conceptually distinct dimension and that the measurement model is acceptable for structural analysis. Taken together, the results of convergent validity, reliability, and discriminant validity demonstrate that the measurement model is statistically adequate and supports further hypothesis testing.

Structural Model Evaluation

The structural model evaluation was conducted to examine the predictive power and explanatory capability of the proposed research model. In PLS-SEM, the structural model is commonly assessed through the coefficient of determination (R^2), predictive relevance (Q^2), effect size (f^2), and collinearity statistics measured by the Variance Inflation Factor (VIF). The R^2 value indicates the proportion of variance in the endogenous variables explained by the exogenous variables in the model. In this study, financial planning and portfolio diversification are treated as endogenous constructs. A higher R^2 value indicates that the model has stronger explanatory power. In addition, Q^2 is used to assess the predictive relevance of the model, where values greater than zero indicate that the model has adequate predictive capability. Meanwhile, the effect size (f^2) is used to evaluate the contribution of each predictor to the endogenous construct, and VIF is used to detect multicollinearity among predictor variables. Therefore, the structural model evaluation is essential to determine whether the proposed model is statistically sound and suitable for hypothesis testing.

Based on the estimated results, the structural model demonstrates an acceptable level of explanatory power. Financial planning has an R^2 value of 0.447, indicating that 44.7% of its variance is explained by anchoring heuristic, availability heuristic, and risk tolerance. Meanwhile, portfolio diversification has an R^2 value of 0.582, suggesting that 58.2% of its variance is explained by anchoring heuristic, availability heuristic, risk tolerance, and financial planning. These values indicate that the model has moderate explanatory power, especially for portfolio diversification. The Q^2 values for both endogenous variables are also above zero, which confirms that the model has satisfactory predictive relevance. This means that the proposed model is capable of predicting the financial behavior of Generation Z investors in Surabaya City in a meaningful way.

Tabel 5. Coefficient of Determination (R^2), Adjusted R^2, and Predictive Relevance (Q^2)

Endogenous Variable	R Square	Adjusted R Square	Q Square
Financial Planning	0.447	0.438	0.291
Portfolio Diversification	0.582	0.571	0.348

As shown in Table 5, the R^2 value for financial planning indicates that the three exogenous variables are able to explain nearly half of the variance in respondents' financial planning behavior. This result suggests that heuristic factors and risk tolerance play a meaningful role in shaping how Generation Z investors organize and plan their finances. In addition, the R^2 value for portfolio diversification is higher, which implies that the combined influence of heuristic bias, risk tolerance, and financial planning provides a stronger explanation for diversification behavior. The Q^2 values of 0.291 and 0.348 further confirm that the model has acceptable predictive relevance, indicating that the endogenous constructs are not only statistically explained but also meaningfully predicted by the model.

To examine the relative contribution of each predictor variable, the effect size (f^2) was also evaluated. Effect size is important because it shows whether a predictor has a small, medium, or large effect on the endogenous variable. In this study, financial planning shows the strongest effect on portfolio diversification, while risk tolerance demonstrates a moderate contribution to both financial planning and portfolio diversification. Anchoring heuristic and availability heuristic show relatively smaller but still meaningful contributions. These results indicate that although all predictors contribute to the model, some relationships are stronger than others in explaining the investment behavior of Generation Z investors.

Tabel 6. Effect Size (f^2)

Relationship	f Square	Interpretation
Anchoring Heuristic → Financial Planning	0.083	Small

Relationship	f Square	Interpretation
Availability Heuristic → Financial Planning	0.097	Small
Risk Tolerance → Financial Planning	0.214	Medium
Anchoring Heuristic → Portfolio Diversification	0.061	Small
Availability Heuristic → Portfolio Diversification	0.072	Small
Risk Tolerance → Portfolio Diversification	0.146	Small to Medium
Financial Planning → Portfolio Diversification	0.287	Medium

Table 6 indicates that financial planning contributes the largest effect to portfolio diversification, with an f^2 value of 0.287, which falls into the medium category. This suggests that financial planning plays a substantial role in explaining diversified portfolio behavior. Risk tolerance also shows a meaningful effect on financial planning and portfolio diversification, reflecting the importance of investors' willingness to face uncertainty in shaping both planned financial behavior and asset allocation decisions. By contrast, anchoring heuristic and availability heuristic have smaller effect sizes, indicating that their influence is present but comparatively weaker than financial planning and risk tolerance. Nevertheless, these heuristic variables remain relevant because they reflect the cognitive dimension of investment behavior that may still affect financial decision-making among young investors.

To ensure that the predictor variables do not suffer from multicollinearity, collinearity statistics were assessed using VIF values. In general, VIF values below 5.00 indicate that multicollinearity is not a serious concern in the structural model. The estimated results show that all VIF values are below the recommended threshold, suggesting that the independent variables included in the model do not excessively overlap with one another. This strengthens the credibility of the structural model and confirms that each predictor contributes unique explanatory information.

Tabel 7. Collinearity Statistics (VIF)

Relationship	VIF
Anchoring Heuristic → Financial Planning	1.462
Availability Heuristic → Financial Planning	1.517
Risk Tolerance → Financial Planning	1.384
Anchoring Heuristic → Portfolio Diversification	1.588
Availability Heuristic → Portfolio Diversification	1.624
Risk Tolerance → Portfolio Diversification	1.471
Financial Planning → Portfolio Diversification	1.733

Table 7 shows that all VIF values range from 1.384 to 1.733, which are far below the critical threshold of 5.00. These findings indicate that multicollinearity is not present in the model and that the relationships among the predictor variables do not distort the structural estimates. Overall, the results of the structural model evaluation suggest that the proposed model has adequate explanatory power, acceptable predictive relevance, meaningful effect sizes, and no serious collinearity problems. Therefore, the model is considered statistically appropriate for the next stage of analysis, namely direct effect hypothesis testing and mediation effect testing.

Hypothesis and Mediation Effect Testing

Hypothesis and mediation effect testing were conducted to examine both the direct and indirect relationships among anchoring heuristic, availability heuristic, risk tolerance, financial planning, and portfolio diversification. In this study, the significance of the proposed relationships was assessed using the bootstrapping procedure in Partial Least Squares Structural Equation Modeling (PLS-SEM). The evaluation was based on the path coefficient, t-statistic, and p-value. A hypothesis is considered supported if the t-

statistic exceeds 1.96 and the p-value is below 0.05 at the 5% significance level. The direct effect analysis was used to determine whether anchoring heuristic, availability heuristic, risk tolerance, and financial planning significantly influence portfolio diversification, while the mediation analysis was used to examine whether financial planning acts as an intervening mechanism in the relationship between the exogenous variables and portfolio diversification.

Based on the estimated results, all direct effects proposed in the study are statistically significant. Anchoring heuristic has a positive and significant effect on portfolio diversification, indicating that investors who rely on initial information or salient reference points tend to show a certain pattern of diversification behavior. Availability heuristic also positively affects portfolio diversification, suggesting that information that is easier to recall or more frequently encountered in digital environments influences how Generation Z investors allocate their assets. Risk tolerance demonstrates a stronger effect on portfolio diversification, which confirms that the willingness to face financial uncertainty is an important determinant of diversified investment decisions. In addition, anchoring heuristic, availability heuristic, and risk tolerance all significantly affect financial planning, with risk tolerance showing the strongest contribution. Financial planning also has a positive and significant effect on portfolio diversification, indicating that investors with more structured financial planning tend to make more diversified investment decisions.

Tabel 8. Direct and Indirect Effect Testing

Hypothesis	Relationship	Path Coefficient (β)	t-Statistic	p-Value	Effect Type	Decision
H1	Anchoring Heuristic → Portfolio Diversification	0.154	2.187	0.029	Direct	Supported
H2	Availability Heuristic → Portfolio Diversification	0.173	2.431	0.015	Direct	Supported
H3	Risk Tolerance → Portfolio Diversification	0.281	3.964	0.000	Direct	Supported
H4	Anchoring Heuristic → Financial Planning	0.201	2.865	0.004	Direct	Supported
H5	Availability Heuristic → Financial Planning	0.226	3.117	0.002	Direct	Supported
H6	Risk Tolerance → Financial Planning	0.418	6.102	0.000	Direct	Supported
H7	Financial Planning → Portfolio Diversification	0.394	5.781	0.000	Direct	Supported
H8	Anchoring Heuristic → Financial Planning → Portfolio Diversification	0.079	2.421	0.016	Indirect	Supported
H9	Availability Heuristic → Financial Planning → Portfolio Diversification	0.089	2.673	0.008	Indirect	Supported
H10	Risk Tolerance → Financial Planning → Portfolio Diversification	0.165	4.308	0.000	Indirect	Supported

As shown in Table 8, all direct relationships are significant at the 5% level. Anchoring heuristic has a positive effect on portfolio diversification (β = 0.154, p = 0.029), availability heuristic also has a significant positive

effect (β = 0.173, p = 0.015), and risk tolerance shows the strongest direct effect on portfolio diversification (β = 0.281, p = 0.000). These findings suggest that both cognitive bias and subjective risk preference are relevant determinants of how Generation Z investors in Surabaya City diversify their portfolios. In addition, anchoring heuristic, availability heuristic, and risk tolerance significantly affect financial planning, with risk tolerance showing the highest coefficient (β = 0.418, p = 0.000). This indicates that investors' risk preference plays an important role in shaping their level of financial planning.

Financial planning itself has a positive and significant effect on portfolio diversification (β = 0.394, p = 0.000), confirming its important role in structured investment decision-making. The mediation test further shows that financial planning significantly mediates the relationship between anchoring heuristic and portfolio diversification (β = 0.079, p = 0.016), between availability heuristic and portfolio diversification (β = 0.089, p = 0.008), and between risk tolerance and portfolio diversification (β = 0.165, p = 0.000). Since both the direct and indirect effects remain significant, the mediation pattern in this study can be interpreted as partial mediation. This means that heuristics and risk tolerance influence portfolio diversification not only directly, but also indirectly through financial planning. Overall, these results confirm that financial planning serves as an important behavioral mechanism that strengthens the explanation of diversified investment behavior among Generation Z investors.

Based on the results of hypothesis testing presented in Table 8, a deeper analytical interpretation is required to understand the broader implications of the findings. Therefore, an analytical summary is provided to synthesize the key results, compare them with previous studies, and explain the underlying phenomena observed in this research.

Table 9. Analytical Summary of Findings

Aspect	Description
Key Findings	Results indicate that all variables significantly influence portfolio diversification. Risk tolerance and financial planning show the strongest effects, while heuristics (anchoring and availability) contribute smaller but significant influences.
Comparison with Previous Research	The findings are consistent with studies by Grable & Rabbani (2023), Godase et al. (2023), and von Gaudecker (2015), which emphasize the importance of risk tolerance and financial planning. However, the significant role of heuristics extends prior findings by integrating cognitive bias into diversification behavior.
Phenomena and Explanations	The results confirm that diversification is not purely rational but influenced by cognitive bias and behavioral factors. The moderate explanatory power (R^2) suggests that external factors such as digital exposure and financial literacy may also play a role.
Preliminary Conclusions	Portfolio diversification among Gen Z investors is shaped by an interaction between cognitive bias, risk preference, and structured financial planning, with financial planning acting as a key behavioral mechanism.

Discussion

Behavioral Tendencies, Financial Planning, and Portfolio Diversification

The findings of this study indicate that behavioral factors play an important role in shaping portfolio diversification among Generation Z investors in Surabaya City. Although heuristic tendencies such as anchoring and availability influence how investors process information, diversification decisions are ultimately reflected in how individuals organize their financial priorities and translate investment preferences into actual allocation behavior. In this context, the present findings suggest that diversified investment decisions among young investors cannot be understood only from the perspective of market

exposure or cognitive shortcuts, but also from the extent to which they are supported by structured financial planning. This argument is consistent with Godase et al. (2024), who emphasized that financial planning propensity reflects an important behavioral foundation in personal financial decision-making [13]. Their study shows that planning-oriented individuals are more likely to behave systematically in managing financial choices, which is relevant for explaining why some young investors are more capable of spreading their investments across different instruments.

A stronger explanation of diversification behavior can also be drawn from von Gaudecker (2015), who demonstrated that household portfolio diversification varies according to financial capability, especially financial literacy and financial advice [14]. This finding is highly relevant to the present study because it indicates that diversification is closely linked to the ability of investors to make informed and structured financial decisions. In the context of Generation Z investors in Surabaya City, this suggests that diversification is not merely a spontaneous reaction to market trends, but a reflection of how well investors are able to manage information, assess financial alternatives, and allocate funds across different assets. Thus, the current findings support the view that behavioral tendencies influence diversification more meaningfully when they interact with structured financial planning and decision discipline. Similarly, Barone et al. (2026) found that financial literacy is positively associated with international portfolio diversification, suggesting that better-informed investors tend to diversify more broadly [15]. Although their study focuses on a wider portfolio context, the implication remains relevant for the current research. It suggests that diversification reflects a more advanced stage of investor behavior, one that requires not only awareness of risk but also deliberate financial management. Therefore, the results of this study can be interpreted as evidence that behavioral tendencies among Generation Z investors should not be viewed in isolation. Instead, they must be understood together with financial planning orientation and the broader capacity to make structured investment decisions. In this sense, the present findings contribute to behavioral finance literature by showing that diversification among young investors is shaped by the interaction between behavioral tendencies and planning-based financial discipline.

The Effect of Risk Tolerance on Portfolio Diversification

The findings of this study show that risk tolerance has a positive and significant effect on portfolio diversification among Generation Z investors in Surabaya City. This result indicates that the willingness of young investors to face uncertainty and potential loss plays an important role in shaping their investment allocation decisions. In behavioral finance, risk tolerance is often treated as a central determinant of portfolio behavior because it influences how investors balance return expectations against risk exposure. The significance of this relationship in the present study suggests that diversification is not merely a technical investment strategy, but also a behavioral response to subjective perceptions of uncertainty. Investors with higher risk tolerance are more likely to engage in broader allocation decisions because they are psychologically better prepared to manage investment fluctuations and avoid excessive concentration in a single asset. This finding is consistent with Grable and Rabbani (2023), who emphasized that financial risk tolerance is strongly associated with the way individuals approach financial decision-making, particularly when supported by financial knowledge [16]. Their study shows that risk tolerance does not operate in isolation, but interacts with cognitive and informational factors in shaping investor behavior. This perspective is relevant to the present study because Generation Z investors often make decisions in an environment characterized by abundant information, digital exposure, and rapid market narratives. In such conditions, the level of risk tolerance becomes an essential filter through which investors interpret opportunities and threats. Thus, the significant effect of risk tolerance on portfolio diversification found in this study confirms that diversification decisions are influenced not only by access to investment options, but also by the internal capacity of investors to tolerate uncertainty in a disciplined manner.

Further support comes from Fateye et al. (2024), who found that behavioral factors play an important role in shaping investment decision-making in the stock market [17]. Their findings reinforce the argument that investment choices are rarely determined by rational calculation alone, but instead reflect a combination of psychological tendencies, contextual influences, and behavioral judgment. In the context of this study, the positive effect of risk tolerance on portfolio diversification indicates that young investors who are more comfortable with uncertainty tend to behave more strategically in allocating their funds. Rather than avoiding complexity, they may become more willing to spread their investments across different instruments in order to manage risk more effectively. This result is particularly relevant for Generation Z investors, who are often exposed to volatile information and short-term market stimuli. Under such conditions, a stronger level of risk tolerance may function as a stabilizing factor that encourages more mature diversification behavior.

This interpretation is also consistent with Rabbani et al. (2018), who described investor profiles as being shaped by differences in financial behavior, risk attitude, and investment orientation [18]. Their perspective supports the present result by suggesting that portfolio decisions are linked to distinct behavioral characteristics among investors. In the case of Generation Z investors in Surabaya City, the significant relationship between risk tolerance and portfolio diversification implies that diversification reflects not only external investment opportunities but also internal investor profiles. Overall, the present study strengthens the behavioral finance argument that risk tolerance is a critical predictor of investment structure. It demonstrates that the ability to tolerate uncertainty encourages young investors to move beyond narrow and reactive investment choices toward more diversified portfolio decisions. This finding also suggests that efforts to improve diversification behavior among young investors should not focus solely on product access or technical literacy, but also on strengthening their capacity to understand and manage financial risk.

The Role of Financial Planning in Influencing Portfolio Diversification

The findings of this study show that financial planning has a positive and significant effect on portfolio diversification among Generation Z investors in Surabaya City. This result indicates that diversification is not only influenced by cognitive tendencies and risk attitudes, but also by the extent to which investors organize their financial decisions in a structured manner. In behavioral finance, financial planning is important because it reflects the ability of individuals to set financial goals, allocate resources systematically, and manage investment choices with greater discipline. The significance of this relationship suggests that investors who engage in stronger financial planning are more likely to diversify their portfolios, since they tend to evaluate risk and return in a broader and more organized way rather than concentrating funds impulsively in a limited number of assets.

This finding is consistent with Godase et al. (2023), who highlight that financial planning propensity represents an important behavioral basis in personal financial decision-making [13]. Their study suggests that planning-oriented individuals tend to make more deliberate and systematic financial choices, which is highly relevant to diversification behavior. In the context of the present study, this implies that Generation Z investors who are more committed to planning their finances are better positioned to distribute investments across different instruments. Such behavior reduces the likelihood of narrow or fragmented investment decisions that may arise from short-term reactions to market information. Therefore, the significant effect of financial planning found in this study confirms that disciplined financial organization is an essential condition for achieving more balanced portfolio allocation.

The result is also supported by von Gaudecker (2015), who found that portfolio diversification varies according to financial capability, particularly financial literacy and the use of financial advice [14]. Although the study emphasizes literacy and advice, its implication is directly relevant to financial planning because

diversification requires investors to process information carefully and make structured allocation decisions. In other words, diversification tends to improve when investors move beyond intuitive or reactive judgment and adopt a more organized financial decision framework. This helps explain why financial planning emerges as a significant predictor in the current study. For Generation Z investors, who often invest in a fast-moving digital environment, financial planning may serve as a stabilizing mechanism that transforms investment activity from opportunistic behavior into a more strategic allocation process. A similar interpretation can be drawn from Rabbani et al. (2018), who describe investor profiles as differing in their financial behavior, risk orientation, and overall decision-making style [18]. Their perspective suggests that diversification is not simply a mechanical outcome, but part of a broader investor profile shaped by planning capacity and financial discipline. This supports the present result by indicating that investors with stronger planning orientation are more likely to demonstrate mature portfolio behavior. In the case of Generation Z investors in Surabaya City, financial planning appears to function as a behavioral marker of investor readiness. Those who plan more carefully are not only better able to align investments with long-term objectives, but also more likely to diversify in a way that reduces concentration risk and improves overall portfolio resilience.

The present finding can also be linked to the broader relationship between financial knowledge, risk orientation, and behavioral decision-making. Grable and Rabbani (2023) show that financial knowledge strengthens the understanding of financial risk tolerance, which implies that more informed investors may be better able to translate their preferences into effective financial action [18]. Likewise, Khan et al. (2017) demonstrate that investors are often influenced by heuristics such as anchoring and availability when making stock-related decisions [7]. Taken together, these studies suggest that financial planning may play a crucial role in reducing the behavioral instability caused by cognitive shortcuts and subjective risk interpretation. Therefore, the significant effect of financial planning on portfolio diversification in this study reinforces the argument that planning is not merely an administrative financial activity, but a core behavioral mechanism through which young investors improve the quality and rationality of their portfolio decisions.

5. Conclusion

This study aims to examine the influence of anchoring heuristic, availability heuristic, and risk tolerance on portfolio diversification among Generation Z investors in Surabaya City, with financial planning as a mediating variable. The findings indicate that all proposed relationships are statistically significant, confirming that both cognitive biases and individual risk preferences play an important role in shaping diversification decisions. Among the variables, risk tolerance emerges as the most dominant factor, while financial planning functions as a significant mediating mechanism that strengthens both direct and indirect effects on portfolio diversification. These results demonstrate that the research objectives have been successfully achieved, particularly in explaining how psychological and behavioral factors interact in influencing investment decisions.

In relation to existing theories, the findings support the perspective of behavioral finance which emphasizes that investment decisions are not purely rational but are influenced by cognitive biases and subjective risk evaluations. The significant role of risk tolerance is consistent with prior studies highlighting its importance in financial decision-making, while the mediating role of financial planning extends previous research by demonstrating how structured financial behavior can transform psychological tendencies into more rational diversification strategies. However, the study also reveals that heuristics, although significant, have a relatively smaller influence compared to risk tolerance and financial planning. This suggests that while cognitive biases remain relevant, their effects may be moderated by increasing financial awareness and planning behavior among Generation Z investors.

From a general perspective, the findings indicate that portfolio diversification among young investors is shaped by a dynamic interaction between cognitive shortcuts, individual risk attitudes, and structured financial management practices. This pattern reflects a transitional behavior in which investors are not entirely irrational, but also not fully rational, instead operating within a bounded rationality framework. The practical implication of this phenomenon is that improving financial planning skills can serve as an effective strategy to enhance more balanced and diversified investment decisions, even in the presence of cognitive biases.

This study contributes to the development of behavioral finance literature by integrating heuristics, risk tolerance, and financial planning into a single explanatory model, particularly within the context of Generation Z investors in an emerging urban environment. In practical terms, the findings provide insights for financial educators, policymakers, and investment platforms to design interventions that emphasize financial planning and risk awareness as key drivers of better investment behavior. Nevertheless, this study has several limitations, including the use of cross-sectional data and a focus on a single geographic area, which may limit the generalizability of the results. Future research is recommended to incorporate longitudinal approaches, expand the sample to different regions, and include additional variables such as financial literacy, digital financial behavior, or social influence to further strengthen and refine the understanding of investment decision-making among young investors.

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