GEN Z AND UNCERTAINTY: STUDY OF MANAGEMENT ACCOUNTING DECISION-MAKING BEHAVIOR BASED ON PROSPECT THEORY

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Abstract. The decision-making behavior of Generation Z as future decision makers is very important to know and understand. This study was motivated by the lack of research on the decision-making behavior of Generation Z, especially in the field of management accounting. Prospect Theory was chosen as the theoretical basis for testing the existence of decision-making bias, namely Certainty Effect, Reflection Effect and Isolation Effect. The instrument used was adopted from Kahneman & Tversky (1979) with adjustments according to Indonesian conditions. The results of the study showed support for Prospect Theory although not entirely. Students experienced a certainty effect but with a weaker effect compared to the results of the Kahneman & Tversky (1979) study. While in the Isolation effect and Reflection effect tests, students were significantly proven to experience it. The results of this study have an important impact on the design of accounting education in training students to make management accounting decisions in conditions full of uncertainty.
Keyword. Prospect Theory, Management Accounting, Behavioral Bias, Certainty Effect, Reflection Effect, Isolation Effect

1 Introduction

From the perspective of the current composition of the world's population structure, generation Z (hereinafter referred to as Gen Z) is the shaper of the world in the future. Based on the population grouping according to the Central Statistics Agency of Indonesia (BPS, 2020), Gen Z is the generation born in 1997-2012. So in 2024, their age will range from 12-27 years. Referring to the productive age category of 15-60 years, Gen Z will be of productive age for at least the next 30 years. Based on UN predictions, until 2085, the productive age will still dominate the world's demographics (UNDESA, 2024). You can imagine how much influence Gen Z will have in the future.

The great potential of Gen Z in the future makes efforts to understand Gen Z today very important. The urgency of understanding them is further strengthened by the characteristics of Gen Z which are different from previous generations. Some interesting findings from the results of the Network of Executive Women (NEW) and Deloitte (2022) survey on Gen Z include, Gen Z values salary less than every other generation, prioritizing social activism more, working at organizations whose values align with their own, have diverse and entrepreneurial opportunities with the safety of stable employment, drawn toward working in the tech industry, prioritizes diversity more, and considers a traditional four-year college education more important than ever before.

In line with the survey results of NEW and Deloitte (2022), several studies show that Gen Z considers environmental issues and sustainability as important values (Sengupta et al., (2024); Fei et al., (2024); Salguero et al., (2024), emphasizes the sustainability of the profession [6], perceives online personal brands as a crucial tool to gain more advantage in job markets [7], value issues such as the perceived environmental impact (green value), the climate crisis, the social signaling potential, and others are significant concerns, including their price perceptions for food purchases [8], Gen Z people are better than generation Y people in controlling their own emotions and those of their co-workers [9], risk perception influences the use of e-wallets [10], and the role of social media usage for investment advice and financial satisfaction [11].

Based on the results of previous research, Chicca & Shellenbarger (2018) summarized 9 characteristics of Gen Z behavior, namely (1) High consumers of technology and cravers of the digital world, (2) Pragmatic, (3) Underdeveloped social and relationship skills, (4) Cautious and concerned with emotional, physical, and financial safety, (5) Individualistic, (6) Increased risk for isolation, anxiety, insecurity, and depression, (7) Lack of attention span, desiring convenience and immediacy, (8) Open- minded, diverse, and comfortable with diversity, and (9) Sedentary activism.

The various behavioral characteristics of Gen Z above are very relevant to study, considering that currently, Gen Z is facing the characteristics of rapid technological progress, climate change, and uncertain social and economic dynamics. In other words, generation Z is exposed to various situations that can cause anxiety and stress. In the face of this uncertainty, understanding how Generation Z manages risk and makes decisions is very important. Unfortunately, there has not been much research that addresses this topic.

Prospect theory, developed by Kahneman & Tversky (1979), offers a framework for analyzing how individuals assess the probability and outcomes of decisions made in situations of uncertainty. Prospect theory suggests 3 potential behavioral biases in decision making, namely Certainty Effect, Reflecting Effect, and Isolation Effect (Kahneman & Tversky, 1979). Certainty effect is a person's tendency to give greater weight to more certain choices than to those that are still possible. Reflecting Effect is a person's tendency to avoid risk (risk aversion) in profitable conditions (positive domain) but become risk seeking when in loss conditions (negative domain). Isolation effect is a person's tendency to focus on different things in the available options, and ignore things that are considered the same.

This study aims to explore Gen Z's attitudes and behaviors in dealing with uncertainty, with a focus on the application of prospect theory. This is expected to provide deeper insight into understanding how psychological factors influence their decision-making, as well as strategies that can be used to help them better deal with uncertainty. As showed by Duffy, et.al., (2019) that Gen Z are easy to get nervous more than previous generation, by understanding these dynamics, we can formulate a more effective approach to supporting Gen Z in managing the challenges that lie ahead.

Currently, research on decision-making behavior is dominated by behavior in investment decisions in the capital market, for example, investors are shown to experience risk avoidance bias [13], herding effect bias ((Marjerison et al., (2023); Peng et al., (2023); Rubesam & Raimundo (2022); Tauseef (2023); Milovidov (2023)), disposition effect [18], ambiguity [19], overconfidence [20]; and fear effect [21].

This study aims to examine 3 biases (Certainty Effect, Reflecting Effect, and Isolation Effect) in Gen Z decision making, especially decision making in the field of management accounting. Understanding biases in management accounting decision making is useful in terms of understanding the implications of these biases in influencing how Gen Z as prospective management accountants make decisions related to resource allocation, cost planning, performance evaluation, and strategic decision making in the business environment.

There are two reasons for choosing management accounting decisions as a research issue. First, accurate decision making in management accounting is key to ensuring the efficiency and success of a company's operations. This is related to the important function of management accounting information in a company, namely as a source of information on Optimal Resource Allocation, Cost Planning and Control, Strategic Decision Making, and Performance Evaluation [22]. The demand for managers to prioritize accurate decision making based on the right information, from a behavioral finance perspective, is a major challenge for managers. Behavioral finance studies show that there is a role for psychological bias in the decision-making process and has an impact on the outcome of the decision (Prosad et al., 2015; Fernandes & Soares, 2019; Hassan et al., 2023; Sinha & Banaras, 2023). This psychological bias is irrational (controlled by sentiment) and has limited ability to process information (tends to make biased decisions). Second, there is still very limited research that applies prospect theory in the field of management accounting. For example, Framing Effect in Financial Reporting [27], Framing Effect and Ordering Effect in budgeting [28] and Framing Effect in inventory control [29].

This study uses students as a research sample with the aim of enriching research on student decision-making behavior. Students are shown to have biased traits in their decision-making, such as herding behavior, overconfidence, mental accounting, loss-aversion, anchoring and introspection [30], and experience bias reflecting effect [31]. Information about student decision-making behavior will be very helpful in identifying possible cognitive biases and anticipating them during the learning period in college, so that the emergence of these biases can be minimized in decision-making in the future. Good provision in Higher Education is a good opportunity considering one of the characteristics of Gen Z who still considers the higher education process as an important way of learning for them [2].

2 Literature Review

2.1 Prospect Theory

Prospect theory is one of the theories in the field of finance, which developed due to dissatisfaction with the assumptions developed in traditional finance studies [32] & Bloomfields (2010)). Disagreement with the assumptions built by traditional finance studies gave birth to behavioral finance studies. Although there is no single unified theory in behavioral finance studies, in general, the assumptions used in behavioral finance studies include, the preferences of decision makers are diverse, changeable, and often formed during the decision-making process itself; decision makers are adaptive to the nature of the decision itself and the surrounding environment, decision makers seek more satisfying decisions than solutions [34]. So, the assumption used is that humans are not creatures who are always rational and have limited information processing abilities. This assumption leads to behavioral finance studies using many theories in psychology and sociology. Ricciardi & Simon (2000) stated that the study of financial behavior is an interdisciplinary study between the fields of psychology, sociology and finance.

Prospect Theory is a theory developed by Kahneman & Tversky (1979) which shows how human behavior faces risk and uncertainty. There are several important findings shown by Kahneman & Tversky (1979b):

a. The Reflection Effect. A person will be risk averse when he/she is in the positive domain, but will become risk seeking when he/she is in the negative domain.
b. The Framing Effect. A positive or negative domain is a form of perception, which depends on how a problem is presented.
c. The Isolation Effect. When a person is faced with related decision choices, he/she tends to simplify them by considering them unrelated, separating risky and non-risky choices.
d. A person's attitude towards risk is determined by a combination of values and weights given. Values are related to changes in a person's well-being and weights are related to subjective assessments of a decision.

As a counter to the concept of Markowitz Utility Theory, Prospect Theory proposes a Value Function curve (ffigure 1) that relates value to the deviation between a reference point and the outcome of a decision. Deviations that exceed the reference point are called gains (profit domain) and are called losses if the opposite (negative domain).

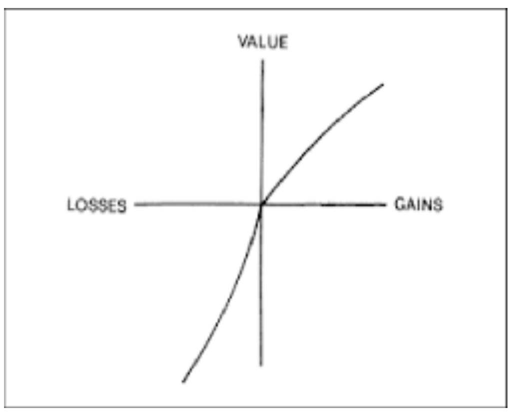

Fig 1. Prospect Theory Value Function Curve
Source: Kahneman & Tversky (1979)

Prospect Theory has been widely used as a grand theory in various decision-making studies. Mowrer & Davidson 2011 tested the application of Prospect Theory in students' academic decision-making. The results showed that students did not show risk-seeking behavior as stated in the theory, but students showed behavior that gave more weight to losses than gains, as predicted by Prospect Theory. In a more in-depth test, Mowrer and Davidson showed students' behavior to be risk-seeking in conditions of losses that had a high probability level.

Safiq et al., (2019) tested the effect of incentive contract framing (framing effect) and class action (certainty effect) on financial reporting decisions. The results of their study indicate that there is an influence of incentive contract framing and class action (litigation) on management's (CFO) financial reporting decisions. Subjects whose incentive contracts are framed positively tend to present more conservative financial reports. Likewise, subjects whose incentive contracts are framed negatively tend to be risky decision makers, so that management (CFO) tends to present less conservative financial reports.

Shen (2020) showed that Prospect Theory can be used to predict the occurrence of the January Effect in the Taiwanese capital market. They showed that every early January, stocks with the lowest capital gains made investors tend to hold their losing stocks, which had an impact on the limited supply of stocks in the Taiwanese capital market and reduced the selling pressure on stocks in January. This shows that investors are willing to sell when prices have risen, which is the cause of the January Effect.

Mochon (2024) studied the application of reference point concept in 12,890 games from 10 NBA seasons. He examined whether risk preferences in the NBA are reference-dependent and attempts to identify the reference point. The study showed that were not influenced by a single fixed reference point, but instead, their choices depend on the score difference, most recent score change, and pregame expectations.

3 Research Methods

3.1 Type of Study

To test the existence of bias in student decision making, this study uses a descriptive approach, as done by Kahneman & Tversky (1979b). This study places students as management accountants and is asked to answer cases in Management Accounting adopted from Kahneman & Tversky (1979b). The instrument consists of a set of cases intended to reveal respondents' preferences regarding their situation in the case presented.

3.2 Data source

The data source used is primary data, namely a questionnaire. The questionnaire contains problems in management accounting, which are developed from questions used by Kahneman & Tversky (1979) which are adjusted to the management accounting decision setting. This study only uses 6 questions out of 12 questions in the Kahneman & Tversky (1979) instrument, but has accommodated 3 behavioral biases in the instrument. The monetary unit used is changed to rupiah, so that students can more easily understand the case. Another adjustment of the instrument in Kahneman & Tversky (1979b) is the use of specifically stated profit and loss information that serves as the same reference point for respondents. This is done to minimize the effect of differences in perception of gains and losses that are too different due to different reference points. There are 3 bias effects (certainty effect, reflecting effect, and isolation effect) which are measured with 2 problems each, so that the total in the questionnaire contains 6 problems..

3.3 Sample

The sample used was university students in Indonesia who had or were taking Management Accounting courses in the even semester of 2023/2024. The questionnaire was distributed physically and online via gform to increase the response rate.

3.4 Operational Variables

There are 3 effects tested in this study, namely the certainty effect, reflecting effect, and isolation effect. Each effect is measured with 2 cases, so there are 6 cases that respondents must answer. Respondents are placed as management accountants, who are asked for their preferences over 2 project options (project A or project B and project C or project D). Each project has an estimate of the profit/funds obtained and the chances of each occurring. Respondents are asked to choose between project A or B and project C or D, in each case that they think they will choose to run in this period. There are no wrong and right answers.

Table 1 below presents the operational variables in the form of case statements to measure the certainty effect, reflecting effect, and isolation effect.

Table 1. Operational Research Variables

CERTAINTY EFFECT		
Case 1:	Project A	Project B
	Selling men's shoes The estimated profit for the product next month is 40 million. The probability of getting that profit is 80%	Selling women's shoes The estimated profit for the product next month is 30 million. The probability of getting that profit is 100%
Case 2:	Project C	Project D
	Selling men's shoes The estimated profit for the product next month is 40 million. The probability of getting that profit is 20%	Selling women's shoes The estimated profit for the product next month is 30 million. The probability of getting that profit is 25%
REFLECTING EFFECT		
Case 3:	Project A	Project B
	Selling men's shoes The estimated loss for the product next month is 40 million. The possibility of getting the loss is 80%	Selling women's shoes The estimated loss for the product next month is 30 million. The possibility of getting the loss is 100%
Case 4:	Project C	Project D
	Selling men's shoes The estimated loss for the product next month is 40 million. The possibility of getting the loss is 20%	Selling women's shoes The estimated loss for the product next month is 30 million. The possibility of getting the loss is 25%
ISOLATION EFFECT		
Case 5:	Project A	Project B
	This year you received an injection of funds from investors of 100 million. Next year, it is estimated that there will be an additional injection of funds of 100 million from other investors. The possibility of the additional funds is 50%.	This year you received an injection of funds from an investor of 100 million. Next year, there will likely be another investor who promises to provide additional funds of 50 million. The possibility of this additional fund is 100%
Case 6:	Project C	Project D
	This year you received an injection of funds from investors of 200 million. Next year, it is estimated that there will be investors who will withdraw their investment funds of 100 million. The possibility of the withdrawal of funds is 50%.	This year you received an injection of funds from investors of 200 million. Next year, it is estimated that there will be investors who will withdraw their investment funds of 50 million. The possibility of the withdrawal of funds is 100%.

3.4.1 Certainty Effect Measurement

Certainty effect is a tendency of a person's attitude to give greater weight to more certain choices than those that are still possible. To measure the presence of this certainty effect bias, 2 questions are used which are stated in case 1 and case 2. In case 1, Project A is a project that gains profits with an opportunity/probability of gaining the profit of 80%. While Project B is a project with a 100% chance of gaining profit.

Case 2 as a pair of case 1, confirms the existence of a certainty effect in case 1. Case 2 is a case that is formulated based on the profit and probability in case 1. Different from case 1 which presents one of its cases with a 100% chance, in case 2, case C and case D are both cases of gaining profits (C 40 million, and D 30 million), but with different levels of probability (C 20% and D 25%). Basically, project C is a reformulation of project A by adding a probability of 25%, and project D is a reformulation of project B by adding a probability of 25%. Based on utility theory, if in problem 1 the most chosen project is project B, then it shows that utility B > utility A. Still based on utility theory, if utility project B > utility project A, then in case 3, the choice of project D should be > project C. However, if the choice of project in problem 2 shows the opposite (C > D), then it shows a violation of utility theory, or a Certainty Effect occurs. Thus, problem 2 becomes a Certainty Effect Measurement

3.4.2 Relection Effect Measurement

Reflection Effect is a person's tendency to be risk averse in a profitable condition (positive domain) but become risk seeking when in a loss condition (negative domain). Basically, cases 3 and 4 are reformulations of cases 1 and 2, namely by changing the condition of getting a profit (profit domain) in problems 1 and 2, to a condition of suffering a loss (loss domain) in cases 3 and 4. Reflecting Effect is measured by comparing cases 3 and 4 with the answers in cases 1 and 2. Reflecting effect occurs if the answers in cases 3 and 4 are the opposite of the answers in cases 1 and 2. If in case 1 the number of people choosing A is less than B (A<B), then it is said that Reflecting Effect occurs if in case 3 the number of people choosing A is more than voters B (A>B). Likewise for the answers in cases 2 and 4.Certainty Effect Measurement

3.4.3 Isoltion Effect Measurement

Isolation effect is a person's tendency to focus on different things in the available options, and ignore things that are considered the same. Isolation effect is measured from the respondents' answers in cases 5 and 6. The things that are considered the same in the two projects in cases 5 and 6 are that all students get additional funds of 100 million (in case 5) and additional funds of 200 million (in case 6). While the things that are conveyed differently are the results and opportunities. In case 5, the possibility of additional funds of 100 million with a 50% chance (project A) and the possibility of additional funds of 50 million with a 100% chance (project B) are shown. While in case 6, the possibility of withdrawing funds of 100 million with a 50% chance (project C) and the possibility of withdrawing funds of 50 million with a 100% chance (project D) are shown. Referring to the utility theory, projects A and C have the same final utility. Likewise for projects B and D. Utility theory states that the point of wealth at a certain point has the same utility, regardless of the process to reach that point. If the respondent's choice behavior is in accordance with utility theory, then the choice of project B > A in problem 5 should be followed by the choice of project D > C in problem 6. However, if what happens is that the choice of project B > A in problem 5 is followed by the choice of project C > D in problem 6, then it is concluded that there is an Isolation Effect. Choices that do not follow utility theory indicate that respondents do not pay attention to final utility in their project selection, but also pay attention to the process of change towards the final utility (changes of wealth)

3.5 Data Analysis Method

The measurement of the existence of bias in the respondent's response is using the number of responses. All responses are measured with the number 1 (ratio scale). The number of responses between projects in each problem is analyzed for the significance of the differences in each response in each project. The difference test conducted is an independent sample difference test using the Excel 2013 program. Interpretation of the results of the difference test uses the method carried out by Kahneman & Tversky (1979).

4 Result and Discussions

4.1 Respondent's descriptive data

The research data was obtained through the distribution of questionnaires. Distribution was done physically to increase the response rate and through gform to make it easier to obtain data from distant universities. The result was 412 respondents. The respondents of this study were all students, most of whom were in their 6th semester and were female. Details of the respondent data are presented in the following table 2.

Table 2. Respondent's Descriptive Data

	Gender
Male	105 (25%)
Female	306 (75%)
	Grade
Semester 4	88 (21%)
Semester 6	324 (79%)

Most of the students who filled out the questionnaire were 6th semester students in the even semester of 2023/2024, because the researcher distributed the data to 6th semester students who generally took the Accounting curriculum, semester 6 was certain to have taken the Management Accounting course. There were also 4th semester students who fell into the respondent criteria, because they were included in the category of currently taking the Management Accounting course. The questionnaire was filled out at the end of the even semester of 2023/2024 so it is certain that they have studied almost all the Management Accounting course materials.

4.2 Instrument validity test

The validity of the questionnaire instrument was assessed for reliability using a pilot study on 30 students. The validity test conducted was construct validity. Construct validity shows how well the results obtained from using the measuring instrument are in accordance with the theory that is the basis for designing the measuring instrument (Sekaran & Bougie, 2016). Construct validity was conducted by comparing student responses between the instrument from Kahneman & Tversky (1979) and the instrument in this study (convergent validity) namely through a correlation test. If the correlation result is above 0.60, it is concluded that there is a strong correlation. The results of the instrument correlation coefficient test show a correlation value ranging from 0.607-0.875, which means that there is a strong correlation between the instrument from Kahneman & Tversky (1979) and the instrument in this study, which means that the instrument used is valid.

4.3 Result and discussion of certainty effect test

The measurement of the existence of bias in the respondent's response is using the number of responses. All responses are measured with the number 1 (ratio scale). The number of responses between projects in each problem is analyzed for the significance of the differences in each response in each project. The difference test conducted is an independent sample difference test using the Excel 2013 program. Interpretation of the results of the difference test uses the method carried out by Kahneman & Tversky (1979).

Certainty effect is a tendency of a person's attitude to give greater weight to more certain choices than those that are still possible. To measure the existence of this certainty effect bias, 2 questions are used which are stated in problem 1 and problem 2. Certainty effect occurs if the number of respondents who choose project B or C is greater and significantly different from those who choose project A or D.

Table 3. Difference Test Results between case 1 and case 2

	Project selection		Project Options Comparison	Significance of difference test
Case 1	Project A	Project B		
	164 (40%)	248 (60%)	A < B	1.75E-09 (significant)
Case 2	Project C	Project D		
	198 (48%)	214 (52%)	C < D	0.132 (not significant)

The test result table in table 3 above shows that in case 1, Project B was chosen more (60%) than Project A (40%) or B > A. The difference is statistically significant (p value 0.0001). The results of the differences shown from the answers to case 1 indicate that there is an indication of a certainty effect, which is a phenomenon where people prefer choices that are considered more certain. In this case, Project B which is certain (100% chance) is considered more profitable, which explains why more people choose B.

To confirm the effect, according to prospect theory, in the answer to case 2, the answer C > D should be, which shows the inconsistency of the utility choice from the answer to case 1. The results of respondents' answers in case 2 do not support the assumption of prospect theory. In case 2, Project D was chosen more (52%) than Project C (48%). This shows that respondents decided on the choice of the project with the same utility preference compared to when they decided on the choice in case 1. And this behavior does not support the findings in case 1 which showed the presence of Certainty Effect. However, statistically the difference in the choice of Project D and Project C is not significant (p value 0.132> 0.05). Project D is chosen more, but the difference is not strong enough to be considered significant in the context of the statistical test conducted. This shows that the decision-making behavior of students, namely the Certainty Effect, is not statistically supported. The conclusion that can be drawn is that the selection of case B which has a 100% chance in problem 1 is due to more than the Certainty Effect factor. The ambiguity of students' attitudes when faced with probabilistic problems shows that the effect of decreasing opportunities (from 100% to 25%) has different effects, some are significantly affected by changes in their utilities, but some aren't. This phenomenon was also found by Seth & Chowdary (2017) and concluded that their respondents experienced a lighter Certainty Effect (lesser Certainty Effect). This effect supported by NEW & Deloitte (2019), which showed Gen Z are put money and salary as matters as other things, such as work-life balance, flexible hours, perks and benefits. If given the choice of accepting a better-paying but boring job versus work that was more interesting but didn't pay as well, Gen Z was fairly evenly split over the choice.

4.4 Result and discussion of refflection effect test

Reflection Effect is a person's tendency to avoid risk (risk aversion) in profitable conditions (positive domain) but become risk seeking when in loss conditions (negative domain). Reflection Effect is measured using cases 3 and 4 which are compared with the answers in cases 1 and 2. Reflecting effect occurs if the answers in cases 3 and 4 are the opposite of the answers in cases 1 and 2. So, Reflection Effect occurs if the results in case 3 (or 4) are the opposite of the results in case 1 (or 2). To determine the presence, 2 stages are needed, first a test of differences between Project choices in cases 3 and case 4, second comparing the results of answers in case 3 with case 1 and the results of answers in case 2 with case 4. The following table presents the results of the test of differences in answers in cases 3 and case 4.

Table 4. Difference Test Results between Case 3 and Case 4

	Project A	Project B	Significancy Result
Case 3	271 (66%)	140 (34%)	2.00E-21 (significant)*
	Project C	Project D	
Case 4	287 (70%)	125 (30%)	3.7E-32 (significant)*

*significant at 0.05

The table 4 above shows that the results of the project selection chosen by students have significantly different results in both cases (case 3 and case 4), with the proportion of voters being very different in absolute terms, almost half (A 66% and B 34%; C 70% and D 30%). Although cases 3 and 4 show significant differences, this does not mean that there is a Reflection Effect. To determine the existence of the Reflection Effect, the results above must be compared with the answers in cases 1 and 2. Or in other words, there is a Reflection Effect if the answer in case 3 is the opposite of case 1 or the answer in case 4 is the opposite of the answer in case 2. The following table (table 5) presents a comparison of the answers in cases 3 and 4 compared to cases 1 and 2, to show whether or not there is a Reflection effect.

Tabele 5. Comparison of Test Case Results

	Case 1	Case 3	Conclusion
Test result	B > A	B < A	*Reflection Effect*
	Case 2	Case 4	
Test result	D > C	D < C	*Reflection Effect*

The answer choices in case 3 show B<A, which is the opposite (reflection) of the student's answer in case 1 which shows B>A. It can be concluded that in cases with a 100% chance, there is evidence that students experience the Reflection Effect. The project chosen by students in case 1 is a project that has a 100% chance of making a profit, which means that students are risk averse in case 1. However, when faced with a choice of projects with a 100% chance of loss in case 3, students actually avoid this choice. Students choose to take projects that have a chance of loss, rather than those that are certain (100%) to lose. In case 3, students are no longer risk averse, they actually act risk taking in cases that are at a loss. In conclusion, there is a reflection effect on projects that are certain.

Similar findings are found in the choice of projects in cases 2 and 4, which indicate the presence of a Reflection effect. The similarity of cases 2 and 4 is that the two project options given are all probabilistic, namely 20% (project C) and 25% (project D). The difference is, case 2 is in the profit domain (profit C 40 million, D 30 million) and case 4 is in the loss domain (loss C 40 million, D 30 million). The results in the profit domain, students choose projects with a higher probability (25%), even though the rupiah profit is smaller. However, when in the loss domain, students choose projects with a lower probability (20%). This behavior shows the Reflection Effect in students. The focus of students when they are in the profit domain is different from when they are in the loss domain. They pay close attention to the probability of its occurrence. When in the profit domain, students try to maximize the probability of its occurrence by choosing a project with the highest probability of occurrence, even though the expected value is actually smaller (30 million). However, when in the loss domain, students choose a project with the lowest probability of loss, namely project C (20%). A difference of 5% is considered material and relevant in their considerations in choosing a project, both when in the profit domain and when in the loss domain.

The results of this study support Kahneman & Tversky (1979) that certainty increases desirability to gain, and supports the conclusion that certainty increases aversiveness to losees. This study also supports the Cumulative Representation of Uncertainty [39], which states that a person's attitude tends to be risk averse when faced with high probabilities in the gain domain, and a risk seeker when faced with high probabilities in the loss domain. As stated in the Cumulative Representation of Uncertainty [39], the sensitivity of probability changes decreases as they move away from the extreme points (0 and 100). Based on this, the probability values of 20% and 25% are considered extreme enough to make students change their opinions, as when they are faced with a case with a 100% chance. Mowrer & Davidson (2011) showed students' behavior to be risk-seeking in conditions of losses that had a high probability level.

4.5 Result and discussion of certainty effect test

The Isolation effect is a person's tendency to focus on different things in the available options, and ignore things that are considered the same. Isolation effect is measured from the respondents' answers in cases 5 and 6 as shown in Table 6. There is an Isolation effect if in case 5 the number of answers B is more than A (B>A) and in case 6 the number of answers C is more than D (C>D).

Table 6. Difference Test Results between Case 5 and Case 6

	Project selection		Comparation	Difference test result
Case 5	Project A	Project B		
	115 (28%)	297(72%)	A < B	5.6E-41 (significant)
Case 6	Project C	Project D		
	221 (54%)	191 (46%)	C > D	0.018 (significant)

Utility theory states that wealth points at a certain point have the same utility, regardless of the process to reach that point. If the respondent's choice behavior is in accordance with utility theory, then the choice of project B > A in case 5 should be followed by the choice of project D > C in case 6. However, if what happens is that the choice of project B > A in case 5 is followed by the choice of project C > D in case 6, then it is concluded that there is an Isolation Effect. Choices that do not follow utility theory indicate that respondents do not pay attention to the final utility in choosing their projects, but pay attention to the change process towards the final utility (changes of wealth).

Table 6 shows that students' answers in case 5 are dominated by project B (B> A) which shows the utility of the decision B > A. However, students' answers in case 6 are dominated by project C (C> D) which shows the utility of the decision C > D. In fact, if students only consider the final states of wealth, as predicted by utility theory, then the preference for B should be followed by the preference for D because B and D have the same final states of wealth. This shows that students experience the Isolation Effect. Students do not consider the overall situation, but only consider different aspects of each option. The choice of project they decide on, is influenced by how the project obtains the final states of wealth. In projects B and D, the final states of wealth of the project are the same, which is 150 million. Project

B obtains the 150 million by adding 50 million from the 100 million given initially. While project D obtains 150 million from the reduction of 50 million from the 200 million given initially. The behavior of students who tend to choose B in case 5 and choose C in case 6 (not choosing D) shows that students' decision-making behavior is also influenced by the direction of the change process towards the final states of wealth point. Based on the answers given in cases 5 and 6, it is concluded that students' decision-making behavior experiences the Isolation Effect. In other words, this study supports the findings of (Kahneman & Tversky, 1979).

5 Conclusions and Implications

This study showed that Gen Z has Certainty Effect, Reflection Effect and Isolation Effect behaviors, similar with student behavior in Kahneman & Tversky (1979)' study. But there is a difference in Certainty Effect, Gen Z has a lesser effect. Seth & Chowdary (2017) concluded that their respondents, as staticians, have less Certainty Effect because they have more experience helps in reducing the biases. Gen Z has experienced much disruption in a short time with changes in the political, social, technological, and economic landscape, such as hyper-technological advancement, tumultuous world politics, racial inequity, and pandemic, which making them fundamentally different even from millennials [41] These characteristics explain Gen Z has less certainty effect than previous generation. There is a shift in risk perception compared to that found by previous researchers.

Gen Z is also has experienced Reflection Effect, both in 100% probability-cases and also in less than 100% one. The choice when in the profit domain is the opposite of the choice when in the loss domain. This study concludes that Gen Z behavior in the profit domain tends to be risk averse, but becomes a risk seeker when in the loss domain. So, both in cases that are certain and probabilistic, student behavior shows Reflection Effect behavior.

Isolation Effect behavior was found significantly in this study. Gen Z showed that they only focused on information that were different from the overall information conveyed by each of the available choices. Students were proven to pay attention to the direction and magnitude of changes in their state of wealth, not just the final wealth position of the decisions they made.

The results of the study above are important information for educators in higher education and subsequent research. Gen Z behavior when facing uncertainty is a big task for educators to provide important guidance or guidelines in dealing with this uncertainty. Important guidelines are needed to face various uncertainties, in addition to economic guidelines such as from ethical perspective. The more gray areas in front of students, the more important it is to have strong guidelines or principles. It is very important for students to understand what is important and a priority for them when dealing with uncertainty. This is an important task for educators in higher education to help students understand themselves and their own situations. Because only by understanding this can they prioritize interests and ultimately decide based on mature assessment.

The second thing that this study shows is that there is a shift in risk perception compared to that found by previous researchers. The results of the study showed an indecisive attitude when dealing with probabilistic cases. While previous studies showed different results. The difference in student attitudes shows that the current generation Z has different tendencies of perception and attitude towards risk. Futher researchers are needed to elaborate how Gen Z' perception and attitude towards risk.

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