An assessment of multiple variables predicting the psychological effects of flooding: Case study in Peninsular Malaysia

	1st reviewer	
	Specific suggestions	**Improvement made/to be made (page numbers where the corrections are made should be made at the end of the revision process)**
1.	methodological description to be insufficiently robust. But not to the extent of describing specific approach. Crucial details such as whether a dichotomous choice Willingness-To-Pay (WTP) question was employed, the range of random bid values presented (if applicable) to cover the distribution of values, the precise wording of the WTP question, and the payment vehicle through which respondents were expected to contribute.	We thank you for the valuable comment. The explanation is as follows: During the in-person engagement, conversations with household heads, business managers, and owners in flood-exposed areas were generally conducted in Malay, as many residents felt more comfortable speaking their native language. Initially, the conversations were informal but shifted to a more formal tone once participants were willing to engage further. The engagement was conducted cautiously to ensure interviewees received sufficient information about the study's purpose before delving deeper into the willingness-to-pay (WTP) questions. Dealing with flood victims requires a delicate approach because they can be quite emotional about their past flood experiences (Joseph et al., 2015). Providing them with space to express their feelings and experiences builds trust and encourages deeper conversation. It also serves as a way to validate the hardships they have endured during flood events. While descriptions of the psychological and mental health effects of flooding were readily provided to interviewees, allowing self-expression helps them rationalize the importance of measures to reduce anxiety and stress. To ensure that respondents had a consistent understanding, all interviewees were briefed on the effects of stress and anxiety. Additionally, they were informed about the challenges of monetizing intangible flood damage, which requires the adoption of the contingent valuation method (e.g., Markantonis et al., 2012; Semrau et al., 2016; Joseph et al., 2015). To avoid confusing intangible losses with tangible losses (as seen in Kabirzad et al., 2024), and to focus willingness-to-pay (WTP) responses solely on psychological and mental health effects, the distinction between the two was clearly explained to the

		interviewees. They were advised not to include financial or asset losses in their WTP values (e.g., Foudi et al., 2022) Respondents were presented with a dichotomous choice question on they are willing to pay for flood mitigation that could reduce the intangible damage of flooding. Respondents who answered "yes" were then asked with an open-ended question on how much they are willing to pay. Those who stated “no” were asked for their reasons. The other considered information that could be a factor in the intangible damage was then collected from the respondents who were willing to participate. It was obvious that most of those who refused to pay were because of disagreement with the payment vehicle – they argued that investment in flood measures should come from the government of the day and not from the people. Such a protest bid is common in social studies where people are given the choice to either participate or not in interviews. Exclusions of protest bids are also necessary to reduce bias in the analysis. Respondents were presented with a dichotomous choice question asking whether they were willing to pay for flood mitigation measures that could reduce the intangible damage caused by flooding. Those who answered 'yes' were then asked an open-ended question about how much they were willing to pay. Respondents who answered 'no' were asked to provide their reasons. Additional information regarding factors that could influence intangible damage was collected from respondents willing to participate further. It was evident that most who refused to pay did so because they disagreed with the payment vehicle—arguing that investments in flood measures should come from the government rather than individuals. Such protest bids are common in social studies where participants have the choice to participate or not in interviews. Excluding protest bids is necessary to reduce bias in the analysis Using examples of hypothetical and real cases, the amount of money they are willing to/they have paid to reduce the stress and anxiety level was asked (e.g., Rogers et al., 2019; Foudi & Osés-Eraso, 2022). The case used was linked to the worst flood event that they have experienced in the past 10 years of the time when the interviews were conducted. Some of the interviewees have actually implemented concrete barriers at the opening of their house to protect from flooding. Such real case was used as a proxy of the willingness to pay value in reducing the psychological effects of flooding. Example questions are: Using examples of hypothetical and real cases, respondents were asked about the amount of money they are willing to pay or have paid to reduce their stress and anxiety levels related to flooding (e.g., Rogers et al., 2019; Foudi & Osés-Eraso, 2022). The cases referenced were linked to the worst flood events they had

		experienced within the ten years preceding the interviews. Some interviewees had actually implemented concrete barriers at their house entrances to protect against flooding. Such real cases were used as proxies for the willingness-to-pay (WTP) values aimed at reducing the psychological effects of flooding. Example questions include 'How much are you willing to allocate to make yourself better prepared and reduce your stress and anxiety if the same flood event were to occur?' 'If the same event is going to happen, and you were not at home, is the barriers that you constructed able to bring you peace of mind and not be affected as much as when it is not there? How much did you spend to prevent flooding?' The above explanation will be included in the improved manuscript.
2	analysis of why respondents declined to answer the WTP question or rejected the offered bid values.	We thank for the valuable comment. The explanation is as follows: Obtaining positive first impressions and responses during engagement and interviews, as well as during the elicitation of values for psychological impacts, was challenging. While the sequential steps and tailored approach undertaken during the interview were performed to gain respondents' trust, some have shown disagreement when asked about their willingness to contribute monetarily to safeguard themselves from the psychological effects of flooding. Some of the people approached declined to pay. As what mentioned in the first comment above, it was obvious during the in-person interviews that people who refused to pay were likely due to their disagreement of the payment vehicle – they argued that investment on measures that may able to reduce their stress and anxiety due to flooding should be bared by the government of the day and not by the affected people. In the present study, 35% people that are approached declined to pay. Such a protest bid is common in social studies and requires exclusion to reduce bias in the analysis (Foudi et al, 2022). Essentially, people are given the choice to either participate or not in interviews. The additions above will be included in the improved manuscript.

3	a conceptual question regarding intangible damage comparability across businesses and individuals (might lie in the pathway through which the damage manifests)	We thank for the valuable comment. The explanation is as follows: Individuals that were interviewed for intangible losses to businesses were informed about the possible manifestation of stress and anxiety that they could have had experienced during flood events. The collected information of the WTP represents the anxiety and stress at their personal level related to the businesses that they are managing, and the stress and anxiety stemming from impacts on productivity and disruption of sales, etc. manifested from the condition of flood events that they are in. For example, concerns about employees' well-being, which affects daily operations and services, as well as the difficulty in managing loss in assets, sales, and recovery to the normal state (Lekuthai and Vongvisessomjai, 2001). Whilst there are overlapping pathways of intangible damages on individuals and the businesses that they own or work in, the present study does not express a distinction between the two as it is perceived that the intangible damages can be of any sort of disturbance to the running of the businesses that cannot be monetised, whether it stems from a personal level of the business owner/worker related to the businesses, or from a more specific losses to business, such as loss of opportunity that they are stress and anxious about. The WTP does not consider economic losses that can be monetised indirectly, for example due to business downtime, and this was made clear during the interview (e.g., Darnkachatarn & Kajitani, 2025) Nevertheless, we are aware of the myriad characteristics of 'flood damage receptors' that can be of significance to influence the intangible economic losses on business sector. They are inevitably influencing the WTP. Future studies can look into detailing the determinants, such as (1) the respondent job title, (2) the type of products that they are selling, and (3) the nature of their businesses (e.g., using online platform to sell products more than physical)(Joseph et al., 2015;Guntu et al., 2025). The study proves that the variables and sample size provided are not sufficient to address the intangible losses despite the face-to-face efforts. Refinement to the method is necessary, yet the challenge remains due to the nature of businesses. The additions above will be included in the improved manuscript.
4	absence of a table indicating the proportion of Small and Medium-sized Enterprises (SMEs) among business owners.	We thank for the valuable comment. The explanation is as follows: The proportions of different businesses types are as follows: Micro-sized businesses are 86% of the of the total respondents of the business premises, and small to medium-sized enterprises are 24%. The categorization of business premises was based on the total number of workers, as specified by SME

		Corporation Malaysia (2022). If the number of workers exceeds five permanent employees, the business was classified as small to medium, while businesses with fewer than five employees were categorized as micro-sized businesses. The additions above will be included in the improved manuscript.
	Typo error	We will do a thorough check and proofread in the improved manuscript
5	Include flood histories of the case study areas	We thank for the valuable comment. The explanation is as follows: Flood-prone locations with the stated descriptions in the submitted manuscript were identified through a rigorous review of authorized documents and reports related to floods, such as those published by the Department of Irrigation and Drainage (2012), Kuala Lumpur City Hall (2015), and the National Statistics Department. The selection was also supported by available GIS information, such as the Open Street Map to locate and verify places. Grey literature and open-source websites were also consulted to verify and confirm area selection. "In Kuala Lumpur, the Segambut district was chosen due to evidence of frequent flooding and large-scale evacuations among residents. For instance, in the 2013 flood event, approximately 2,000 residents evacuated from the area (Khairi et al., 2013). In-person interviews with the Kuala Lumpur City Hall authority (DBKL) in 2020 also verified the area's vulnerability to flooding. Similarly, Kajang and Dengkil, in the state of Selangor, have experienced multiple flood events, some of which resulted in significant evacuations. Both areas are situated within the Langat River basin, which has a notable history of flooding. According to state-level flood reports, a 2020 event forced around 200 people in Kajang to evacuate and 500 residents in Dengkil to seek shelter. In Kelantan state, Kota Bharu city has experienced numerous flood events. One example is the devastating flood in 2014, when 20,000 residents were forced to evacuate (Abdullah, 2014). The additions above will be included in the improved manuscript.
6	Is it that individuals are inherently more susceptible to flooding, or	We thank for the valuable comment. The explanation is as follows:

	is it that, when focusing on intangible damage, there is simply greater scope for experiencing intangible losses when a flood impacts one's home compared to one's place of business?	For residential buildings, intangible damages primarily affect personal well-being, including family- or self-related worries, stress, sleep disturbances, and difficulties in managing possessions or recovering to normalcy. In the case of businesses, intangible damages center on concerns about employees' well-being, which impacts daily operations and services, as well as challenges in managing asset losses, drops in sales, and recovery to normal operations. Therefore, comparing intangible damage assessments between households and businesses is difficult, as each context presents distinct forms of evidence for evaluating impact. This is consistent with findings from residential households, where lower income or larger business size does not necessarily mean their willingness to pay (WTP) significantly differs from those with higher income or small to medium business size When comparing the willingness to pay (WTP) of residential households and businesses, residential households report greater intangible losses. The higher WTP among residential households reflects their increased perceived need for interventions to reduce psychological and mental distress caused by floods. However, separate analyses of residential and business WTP, in terms of median values across all income and business size groups, suggest that the findings are not fully conclusive. The comparable median WTP values across different income groups and business sizes indicate that the assumption of income being a decisive factor in reducing intangible damage cannot be confirmed through single-variable analysis. It is important to note that WTP values across groups might vary with a larger sample size. This represents one of the ongoing challenges in collecting data from first-hand flood victims The additions above will be included in the improved manuscript.
7	A clear delineation between intangible and tangible damages. The WTP question (at least as I infer it from the context) likely conflates both tangible and intangible damages with	Tangible flood damages refer to the impacts on the financial and economic conditions of structures exposed to flooding, whether directly or indirectly (e.g., Kabirzad et al., 2024). In contrast, intangible damages relate to the psychological effects experienced by people exposed to floods impacting their homes or business premises. These effects include enduring unprecedented experiences such as losing possessions, impacts on physical health, disruptions to livelihoods, or even the loss of loved ones (e.g., Stanke et al., 2012; Yoda et al., 2017). To distinguish tangible losses of assets and other direct tangible damages, financial impacts were set aside to focus on psychological impacts (e.g., Foudi et al., 2022). This distinction was made clear during the

	an individual's perceived budget for implementing risk reduction measures.	interviews, where respondents' willingness to pay to alleviate psychological and mental burdens during floods was explicitly separated from tangible losses they had experienced. Additional factors related to intangible damage were then collected from respondents who were willing to participate. Using examples of hypothetical and real cases, amount of money they willing to/they have paid to reduce the stress and anxiety level were asked (e.g., Rogers et al., 2019; Foudi & Osés-Eraso, 2022). The used case was linked to the worst flood event that they have experienced in the past 10 years of the time when the interviews were conducted. Some of the interviewees have actually implemented concrete barriers at the opening of their house to protect from flooding. Such real case was used as proxy of the willingness to pay value in reducing the psychological effects of flooding. Example questions are: 'How much are you willing to allocate to make yourself better prepared and reduce your stress and anxiety if the same flood event were to occur?' 'If the same event is going to happen, and you were not at home, is the barriers that you constructed able to bring you peace of mind and not affected as much as when it is not there? How much did you spend to prevent flooding?' The additions above will be included in the improved manuscript.
8	the survey was conducted post-flood, significant variations in recovery rates would be expected. Therefore, why is it that the regression modeling/survey did not incorporate any variables related to the recovery process?	The study aimed to assess intangible damage using multiple possible contributing variables, focusing on conditions related to the flood, building, and socioeconomic characteristics of the particular household or business premises during the flood events only. The recovery rates are not explicitly informed, but is assumed to be implicit in other variables. However, we agree that the response recovery is a valuable indicator for intangible flood damage and can lead to a more specific non-structural measure to reduce intangible damage. The manuscript will highlight that further study should account for the response recovery as one of the governing variables.
9	absence of a regression analysis for the business observations	Among all ten independent variables, only seven were considered for the business regression analysis because variables related to households—such as family size, having children, and/or elderly members—apply only to household characteristics. Income showed a positive correlation, while business duration (in

	Some form of variable reduction process was undertaken (Table 4)	years) was negatively correlated. Meanwhile, multicollinearity was checked to identify highly correlated independent variables. After assessing correlations with coefficients greater than 0.5, the variance inflation factor (VIF) scores of those variables were evaluated. Variables with high VIF scores, such as flood duration, were removed from the analysis The regression analysis for business premises is as follows: the p-value associated with the regression model is 0.15, which exceeds the threshold, suggesting a failure to reject the null hypothesis. This indicates that the selected factors do not significantly predict intangible damage within the business sector. Among all considered variables, only income shows a statistically significant relationship with intangible damage. Another study by Czajkowski and Cunha (2020) found that income is not a significant variable for intangible damage to business premises, unlike flood duration, building type, and building height An R^2 value of 0.28 indicates that the independent variables explain 28% of the variability in the outcome. While this may be considered low in some contexts, an R^2 of 0.10 or even lower can be acceptable in certain situations, as numerous other factors could also influence the outcome (Hair et al., 2018). It is noteworthy that the findings on variable significance contrast with other research. Other flood damage studies have commonly used a p-value threshold of 0.05 to determine significance (Wijayanti et al., 2017; Svenningsen et al., 2020). This result leads to the acceptance of the null hypothesis, indicating that the factors under consideration do not significantly predict intangible damage within the business sector. The additions above will be included in the improved manuscript.
10	At best, the CVM, within the constraints of an individual's budget, provides a measure of their willingness to pay to reduce such damage. However, this is not synonymous with the actual intangible damage itself, although the two are undeniably related.	Willingness to pay (WTP) is employed in this paper as a method to elicit value, supported by the contingent valuation (CV) stated preference method. The aim is to quantify the psychological and health impacts—a form of intangible damage—associated with residential buildings and business premises. Using these methods, the article estimates the non-market value of stress, distress, and worries, capturing the intangible effects of flooding. The actual intangible damages associated with the exposed elements can be comparatively very high and include cultural loss, ecosystem damage, environmental loss, loss of memorabilia, trauma, and loss of trust (Hammond et al., 2013; Nafari & Mendis, 2018; Olesen et al., 2017). These represent other types of intangible damage that can be considered in future research The additions above will be included in the improved manuscript.

11	"An Assessment of the Willingness to Pay for Flood Risk Reduction: A Case Study in Peninsular Malaysia," which, while still valuable, addresses a slightly less novel research question. Addressing this question would require a different framing of the paper, and which would open further questions about why the socio-psychological domain of variables and welfare with was not included in the paper (e.g., where are risk perceptions as someone who expects to be flooded again may have even larger intangible impacts because they are "stuck") given that psychological damage is psychological and will be driven by the interaction with other tangible and intangible factors.	Thank you for the suggestion. The study defines psychological health impacts as stress, emotional instability, wariness, and anxiety that befall people directly experienced with flooding, and attempts to monetize the impacts using the WTP method. We are aware of the possible conceptual arguments that may arise with respect to the factors that can lead to psychological health impacts of flooding, but we are limiting the variables to a number that are manageable in the context of the present study. As for the people's perception, this is a topic that is also important and will influence the WTP. The people being interviewed in the present study were those who had experienced flooding at the place where they were interviewed (post-event). It is assumed that they are aware of the risk that they are exposed to, and the WTP that they have provided was in view of floods that may occur again in the future. In fact, the questions that were put forward for them to provide the WTP were based on the depth and duration of the same extreme event that they had experienced. Therefore, it is assumed that the influence of perception to the WTP that they provided is minimal. The present study attempts to frame the psychological health impact in the context of cost-benefit analysis, where monetary metric was used as the decision support metric. The CBA often neglects the intangible damages that could lead to malinvestment in flood risk mitigation efforts. Even if investments were allocated for reducing mental burden, justifications were difficult to make in terms of how much public spending a case would require. Moreover, allocations to reduce psychological effects are usually prompted reactively. The present study attempts to incorporate the subjective experiences of people exposed to flooding in the risk-based flood investment decision-making. Albeit the wide range of extended research avenues that can be explored under the theme of psychological effects of flooding, the present study is part of the limited studies attempting to provide evidence of intangible flood damages of the residential and business sectors. Depending on a study's perspective, future work can discern the type and degree of intangible losses and incorporate more social variables into the intangible flood losses analysis. Thank you for the suggestion. The 'intangible losses' is a common term used in flood damage analysis in the context of flood risk management literature, hence it is deemed necessary to be maintained in the title.

	2nd reviewer	
	Specific suggestions	**Improvement made/to be made (page numbers where the corrections are made should be made at the end of the revision process)**
1	Validity of WTP as a proxy for psychological impact - A clearer rationale and discussion of its limitations are needed	Thank you for the comments. Responses mentioned in the previous texts have address the methods in which WTP questions were asked. Below are the copies: Willingness to pay (WTP) is employed in the paper as a method to elicit value, supported by the contingent valuation (CV) state preference method. The aim is to quantify the psychological and health impact—a form of intangible damage—associated to residential buildings and business premises. Using these methods, the study estimates the non-market value of stress, distress, and worries, which captures the intangible effects of flooding. The application of non-market valuation in flood damage assessment, particularly for informing decision-making in flood damage and risk management, is infrequently used and remains relatively new (Rogers et al., 2019). The psychological health impact is framed in the context of cost-benefit analysis, where monetary metric was used as the decision support metric. The CBA often neglects the intangible damages that could lead to malinvestment in flood risk mitigation efforts. Even if investments were allocated for reducing mental burden, justifications were difficult to be made in terms of how much public spending would a case require. Moreover, allocations to reduce psychological effects are usually prompted reactively. The present study attempts to incorporate the subjective experiences of people exposed to flooding in the risk-based flood investment decision making. We are aware of the possible conceptual arguments that may arise with respect to the factors that can lead to psychological health impacts of flooding, but we are limiting the variables to a number that are manageable in the context of the present study. The present study is part of the limited studies attempting to provide evidence of intangible flood damages of residential and businesses sectors. Depending on a study's prospect,

		future work can discern the type and degree of intangible losses, and incorporate more social variables into the intangible flood losses analysis. As for the results of the present study, one limitation that stood out is related to the lack of association between the variables and the psychological burden of the business premises. The lack of association has led to non-significant p-values among most of the considered variables. This is influenced by the small sample sizes among the respondents from the business sector, despite the efforts of the in-person interviews.
2	There needs to be more citations, depth, and restructuring. It would benefit from an in-depth literature review; could you include recent work on flood resilience and mental health in SE Asia? Some claims in the introduction lack evidence.	The introduction has been restructured to add more citations related to Southeast Asia countries in terms of the intangible damages, despite the lack of references. The following addresses the reviewers' concern: The Southeast Asian region has suffered adverse mental health effects due to extreme weather hazards and floods, leading to high levels of depression, anxiety, and stress compared to other extreme weather events (Patwary et al., 2024). One significant consequence of flooding is the psychological impact on exposed individuals, who endure unprecedented experiences such as loss of possessions, physical health challenges, livelihoods, or, even worse, the lives of loved ones (Law et al., 2025). Psychological effects can be defined as the emotional and mental responses individuals experience due to disruptions in daily life, including anxiety, depression, and stress, often exacerbated by isolation and changes in routine (Veale, 1987) In the past decade, the analysis of flood consequences has expanded from primarily focusing on conventional tangible damages, such as physical and economic losses, to also understanding psychological effects as a subset of the adverse consequences of flooding (e.g., Stanke et al., 2012; Yoda et al., 2017). Factors contributing to the coping capacity of a community, such as strong social networks among community members and organized shelter systems, have been shown to reduce anxiety and stress during flood recovery periods (Zahari & Hashim, 2018; Akhir et al., 2021). The current consensus is that understanding the psychological effects of flooding is important to enhance decision-making in flood management (Ti et al., 2016; Nawi et al., 2021; Sulong & Romali, 2022). Some studies have claimed that intangible flood damages are more severe than tangible losses (Nga et al., 2018; Han et al., 2023). It is widely accepted that intangible damage is a crucial factor in risk assessment, particularly for households (Joseph et al., 2015)

3	justify the variable selection	A range of variables, identified based on expert knowledge from different domains, are considered important for assessing intangible flood damage. These variables relate to flood characteristics, building factors, socio-economic characteristics, and damages to households and businesses (a full list is provided). Building type, business size, the presence of elderly or children, and ownership status were treated as binary variables. The analysis was conducted for both binary and continuous variables, followed by assessments of correlation and regression coefficients.
	discussion around the low R2 values - What unmeasured variables might explain the variance?	Explanation is added to the R^2 result section. The regression model for intangible damage yielded a coefficient of determination (R^2) of 0.23, indicating that 23% of the variation in the dependent variable is explained by the independent variables. While an R^2 of 0.25 may be considered weak in some contexts, its interpretation is highly dependent on the field of study. The value of 0.23 is considered acceptable for this study on intangible damage, consistent with findings in other research that have reported similar values (Wijayanti et al., 2017) It is important to note that a low R^2 does not necessarily imply a weak model, as its value is heavily influenced by the inherent variability of the data (Hamilton et al., 2015). In fact, in some research fields dealing with human behaviours, an R^2 of 0.10 or lower can be considered acceptable, since its significance depends entirely on the research context (Hair et al., 2018). The model's explanatory power could likely be improved by incorporating a broader set of variables. Future studies should consider including additional physical, economic, and environmental characteristics in a multiple regression analysis to account for a greater portion of the variation in intangible damage.
	how they tested multicollinearity	The regression analysis on intangible damage indicated multicollinearity between two independent factors: flood duration and distance from the river in residential buildings. Therefore, the distance from the river was excluded to improve both the accuracy and reliability of the regression analysis, leaving nine independent variables. For commercial buildings, the datasets remained untransformed except for income data, which was log-transformed. All other variables met the normality criteria (Gaussian distribution). The assessment of multicollinearity was based on two diagnostic measures: the correlation coefficient and the Variance

		Inflation Factor (VIF). A correlation coefficient greater than 0.5 between independent variables, supported by VIF analysis, indicated the presence of multicollinearity.
	focusing on average damage values to make comparisons more meaningful.	The intangible damage variations of residential households and businesses, according to income groups, business size, and the distance of their buildings from the river, were analysed in terms of total and average values. The total values refer to the cumulative willingness to pay (WTP) from all respondents within each category. Meanwhile, the average values represent the mean WTP within the respective categories. The damage analysis compares both average and total damage across income groups (Figures 4 and 5)
	Account for the time elapsed since the flood events. When were the interviews done? If the study was done shortly after the floods, psychological effects might not yet be fully visible	This study is based on a survey conducted in 2020. Respondents were asked to report on flood-related impacts from events occurring within the ten-year period from 2010 to 2020.

4	The discussion section is overly descriptive, repeating findings without offering deeper analysis. For instance, the observation that B40 households report lower average intangible damages than T20 contradicts expectations, yet no explanation is offered. Not just cite. But critically assess why the results agree or diverge The authors should engage more critically with their data, exploring possible explanations and linking findings to concrete policy recommendations or planning strategies. There are sweeping statements and generalisations that are problematic	We thank for the valuable suggestion: The discussion has been revised accordingly. It has been updated to avoid repetition and critically assess areas of agreement or divergence with other researchers. Additionally, it provides a clear link between the findings and their implications for policymakers and planners in future flood management. Here is example for the income variables: This study's results also demonstrated that income does not affect a household's intangible damage. Families prioritize addressing the mental health effects on their members regardless of their wealth or income. However, other studies have found that household monthly income shows a statistically significant contribution to flood-related mental health impacts (Ghanbarpour et al., 2014; Yusmah et al., 2020). Others reported that the middle-income group of households is willing to contribute to the willingness to pay and plan for the flood prevention measures, but higher-income households were reluctant to respond to the willingness to pay. The older individuals have a lower demand for protection, even though they are also the most financially vulnerable (Foudi & Osés-Eraso, 2022). The current study also found that middle-income households show participation in efforts to prevent the mental health impact. Addressing intangible damage may help households mentally prepare for flooding or improve their ability to cope with the flood effect. The contribution of income to intangible damage may encourage the community to integrate of multiple prevention measures, enhancing risk reduction strategies. However, it requires the combined efforts of all stakeholders (Mishra & Sinha, 2020). The additions above will be included in the improved manuscript.
	The manuscript is weakened by poor sentence structure and	The article has been revised by the author and co-authors for grammar and sentence structure accordingly.

	grammar issues, which undermine the quality. There is a lot of repetition, Figs 3 and 4 are hard to interpret (lack of labelling and descriptive captions), and editing is strongly recommended Instead of the elderly, elderly people should be used. There are some formatting issues. Some tables are hard to interpret, such as lacking units. Parts of your results are in the methods part. See attached doc.	

	3rd reviewer	
	Specific suggestions	**Improvement made/to be made (page numbers where the corrections are made should be made at the end of the revision process)**
1	the justification of the WTP approach and crucial details on its implementation in the questionnaire are widely missing	We thank you for the comments This study's results indicate that income does not significantly affect a household's intangible damage. Families tend to prioritize addressing the mental health effects on their members regardless of their wealth or income. However, other studies have found that household monthly income shows a statistically significant contribution to flood-related mental health impacts (Ghanbarpour et al., 2014; Yusmah et al., 2020). Some research reports that middle-income households are more willing to contribute to flood prevention measures through willingness to pay, while higher-income households are more reluctant to respond. Older individuals, despite being the most financially vulnerable, reportedly have a lower demand for protection (Foudi & Osés-Eraso, 2022). Consistent with this, the current study also found that middle-income households participate more in efforts to prevent mental health impacts. Addressing intangible damage may help households mentally prepare for flooding or improve their ability to cope with flood effects. The contribution of income to intangible damage may encourage communities to integrate multiple prevention measures, enhancing risk reduction strategies. However, this requires the combined efforts of all stakeholders (Mishra & Sinha, 2020) The addition above will be included in the manuscript
2	only 141 out of 380 respondents answered the WTP question, reveals that there were difficulties with this approach which probably led to uncertain data. The authors should comment on this in much more detail	We thank you for the comments Business respondents were often unavailable due to busy schedules, resulting in longer wait times for interviews. In some cases, businesses had already relocated. The majority of interviews were conducted with residents from residential buildings, although some residential respondents declined to participate. The total sample size collected was 271 respondents from both groups. The addition above will be included in the manuscript.
3	why only 217 out of 380 responses were valid at all and why so many refused to answer the WTP question. How do you assess the general validity of your data?	The total collected sample size was 217, as 163 people declined to participate in the interview. Some business respondents were unavailable due to their busy schedules, resulting in longer wait times for interviews. In certain cases, businesses had already relocated. The majority of interviews were conducted with residents from residential buildings. The validity of the data relied on expert judgment, given the challenges in collecting socio-economic and psychological data. The addition above will be included in the manuscript

4	Refer to the referee documents where comments are.	Thank you for the comments and the manuscript revised according to the comments.

1. The justification of the WTP approach and crucial details on its implementation in the questionnaire are widely missing.

We thank you for the comments

This study's results indicate that income does not significantly affect a household's intangible damage. Families tend to prioritize addressing the mental health effects on their members regardless of their wealth or income. However, other studies have found that household monthly income shows a statistically significant contribution to flood-related mental health impacts (Ghanbarpour et al., 2014; Yusmah et al., 2020). Some research reports that middle-income households are more willing to contribute to flood prevention measures through willingness to pay, while higher-income households are more reluctant to respond. Older individuals, despite being the most financially vulnerable, reportedly have a lower demand for protection (Foudi & Osés-Eraso, 2022). Consistent with this, the current study also found that middle-income households participate more in efforts to prevent mental health impacts. Addressing intangible damage may help households mentally prepare for flooding or improve their ability to cope with flood effects. The contribution of income to intangible damage may encourage communities to integrate multiple prevention measures, enhancing risk reduction strategies. However, this requires the combined efforts of all stakeholders (Mishra & Sinha, 2020)

The addition above will be included in the manuscript

2. Only 141 out of 380 respondents answered the WTP question, which reveals that there were difficulties with this approach, which probably led to uncertain data. The authors should comment on this in much more detail why only 217 out of 380 responses were valid at all and why so many refused to answer the WTP question. How do you assess the general validity of your data?

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The addition above will be included in manuscript.

3. Why **were only 217 out of 380 responses valid at all, and why so many refused to answer the WTP question? How do you assess the general validity of your data?**

The total collected sample size was 217, as 163 people declined to participate in the interview. Some business respondents were unavailable due to their busy schedules, resulting in longer wait times for interviews. In certain cases, businesses had already relocated. The majority of interviews were conducted with residents from residential buildings. The validity of the data relied on expert judgment, given the challenges in collecting socio-economic and psychological data.

The addition above will be included in the manuscript

4. Refer to the referee documents where comments are.

Thank you for the comments and the manuscript revised according to the comments.