Review Form 3

Journal Name:	**Archives of Current Research International**
Manuscript Number:	**Ms_ACRI_123650**
Title of the Manuscript:	**AP STATISTIC FOR IDENTIFICATION OF OUTLIERS IN MULTI-RESPONSE EXPERIMENTS WITH CORRELATED ERRORS**
Type of the Article	**Original Research**

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PART 1: Review Comments

Compulsory REVISION comments	**Reviewer's comment**	**Author's Feedback** *(Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)*
Please write a few sentences regarding the importance of this manuscript for the scientific community. Why do you like (or dislike) this manuscript? A minimum of 3-4 sentences may be required for this part.	The manuscript presents an innovative approach by modifying the Andrews and Pregibon (AP) statistic for identifying outliers in multi-response experiments with correlated errors. It is a timely contribution to statistical methodology, as outliers in correlated experimental data are often overlooked, leading to inaccurate conclusions. The proposed method shows promise for improving outlier detection and offers practical value in experimental design. However, the literature review could benefit from including more recent studies to provide a broader context for the current work. The mathematical sections could be presented more clearly for a wider audience.	
Is the title of the article suitable? **(If not please suggest an alternative title)**	Yes, the title accurately reflects the content of the article.	
Is the abstract of the article comprehensive? Do you suggest the addition (or deletion) of some points in this section? Please write your suggestions here.	Yes, the abstract is concise and covers the core elements of the study. However, adding more detail about the practical applications of the method would provide additional clarity.	
Are subsections and structure of the manuscript appropriate?	Yes, the subsections are appropriately structured and allow for a logical flow of information.	
Please write a few sentences regarding the scientific correctness of this manuscript. Why do you think that this manuscript is scientifically robust and technically sound? A minimum of 3-4 sentences may be required for this part.	The manuscript is scientifically sound, with a clear methodology and valid simulation results. The adaptation of the AP statistic is well-supported by theoretical derivations, and the simulations confirm its effectiveness in identifying outliers. The statistical model is robust and technically well-executed, which is crucial for ensuring accurate parameter estimation in multi-response experiments with correlated errors.	
Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.	The references cover foundational work but could be updated with more recent studies to provide greater relevance to the current state of the field. Consider adding recent advancements in multi-response experimental designs.	

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Minor REVISION comments **Is the language/English quality of the article suitable for scholarly communications?**	Yes, the language is clear, but some sections could be improved for readability, particularly in the explanation of complex mathematical models.	
Optional/General comments	The article provides an important tool for researchers working with multi-response experiments and complex error structures. Including more practical examples beyond simulations could make the study more accessible to experimental researchers. *Errors* The manuscript addresses a relevant statistical problem in multi-response experiments, particularly focusing on the identification of outliers when correlated errors are present. The paper extends the Andrews and Pregibon (AP) statistic, originally developed for linear regression, to multi-response experiments where correlated errors play a critical role. **Strengths** ➢ **Relevance**: The study addresses an important issue in statistical modeling—outlier detection in the presence of correlated errors, which is vital for accurate data interpretation. ➢ **Innovative Approach**: Modifying the AP statistic for use in multi-response experiments is a novel contribution, providing new perceptions for dealing with influential observations. ➢ **Simulation Study**: The use of simulated data to validate the proposed method is appropriate and strengthens the manuscript's claims. ➢ **Real-World Applicability**: By focusing on design models with correlated errors, the paper highlights a real-world problem that many researchers face in experimental data analysis. **Weaknesses** ➢ **Literature Review**: The literature review could be more comprehensive. While it references key studies on outliers and correlated errors, it lacks discussion on recent advancements or comparisons with alternative approaches. ➢ **Methodological Clarity**: The mathematical derivations, while technically sound, could be presented in a clearer and more structured manner. Some readers may struggle to follow the steps, particularly in the transition from univariate to multi-response models. ➢ **Practical Consequences**: The paper provides limited discussion on the practical consequences of retaining outliers. More real-world examples or case studies beyond simulations could enhance the manuscript's practical relevance. ➢ **Conclusion**: The conclusion summarizes the study well but does not offer strong recommendations for future research or broader applications, which could enhance the overall impact. **Recommendation** While the paper makes a valuable contribution to the field of experimental design and outlier detection, some revisions are necessary to improve its clarity and practical relevance. Based on its technical merits and the novelty of the approach, **the manuscript can be accepted with minor revisions**. Specifically, improving the clarity of mathematical sections and expanding the discussion of practical applications will significantly enhance the paper.	

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PART 2:

	Reviewer's comment	**Author's comment** *(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)*
Are there ethical issues in this manuscript?	*(If yes, Kindly please write down the ethical issues here in details)*	

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