

**Review Form 3**

Journal Name:	<a href="#">Asian Journal of Probability and Statistics</a>
Manuscript Number:	Ms_AJPAS_125479
Title of the Manuscript:	OPTIMIZATION OF EXPERIMENTAL PARAMETERS IN THE BUILDING CONSTRUCTION PROCESS WITH FRACTIONAL FACTORIAL DESIGN AND RESPONSE SURFACE METHODS
Type of the Article	RESEARCH ARTICLE

### Review Form 3

#### PART 1: Review Comments

Compulsory REVISION comments	Reviewer's comment	Author's Feedback <i>(Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)</i>
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.	This manuscript is valuable for the scientific community as it tackles the critical issue of optimizing concrete mix to improve structural safety, particularly in regions prone to building collapses. The use of fractional factorial design and response surface methodology provides a systematic, data-driven approach. I appreciate the clear methodology and practical relevance, though more focus on economic feasibility would enhance its impact.	
Is the title of the article suitable? (If not please suggest an alternative title)	The current title, "Optimization of Experimental Parameters in the Building Construction Process with Fractional Factorial Design and Response Surface Methods", is descriptive but quite lengthy. It could be more concise while still conveying the key focus of the research. A possible alternative title could be: "Optimization of Concrete Mix Design Using Fractional Factorial Design and Response Surface Methodology".	Titled updated to optimization of concrete mix design using Fractional factorial design and Response Surface Methodology.
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.	The abstract is mostly comprehensive but can be shortened for clarity and focus: <ol style="list-style-type: none"><li>1. Clarify Methodology: Briefly explain why Minitab software was used without going into too much detail.</li><li>2. Focus on Practical Implications: Emphasize how the findings can be applied in the construction industry.</li><li>3. Remove Redundancies: Eliminate phrases like "sets a foundation for future research" and focus on key outcomes.</li></ol>	Refer to the updated abstract for more explanation on why Minitab was used and the practical implication of the work.
Are subsections and structure of the manuscript appropriate?	The subsections and structure of the manuscript are generally appropriate. However, to improve clarity, you might consider: <ol style="list-style-type: none"><li>1. Introduction: Highlight the problem statement and research gap more explicitly.</li><li>2. Methodology: Break down the subsections for better flow, such as separating "Experimental Design" and "Response Surface Methodology."</li><li>3. Results and Discussion: These sections are well-structured, but could benefit from clearer transitions between key findings and their implications.</li></ol>	<ol style="list-style-type: none"><li>1. The updated work highlight the problem statement and research gap more explicitly.</li><li>2. The subsections in the methodology are breakdown into fractional factorial design and response surface Methodology .</li><li>3. Refer to table 3 and section 5.2 for the key findings and their implication</li></ol>
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 robust due to its use of fractional factorial design and response surface methodology, both reliable tools for optimization. The statistical analysis, including ANOVA and regression models, supports the findings effectively. The high R-squared values and well-discussed interactions between factors further validate the study's conclusions.	
Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form. :	The references in the manuscript are generally sufficient, but many of them are older, such as works from Box and Draper (1959) and Montgomery (2012). While these are foundational references, incorporating more recent studies, particularly in the last 5-10 years, would strengthen the manuscript by ensuring it reflects the latest advancements in the field. Recent research on optimization methods in construction and material science could be added to provide a more updated context. Suggested Addition: Recent studies on optimization in concrete mix design or studies related to sustainable construction materials would be useful to make the literature review more current. A focus on recent papers from 2018 onward would improve the manuscript's relevance to today's challenges in construction engineering.	The references in the current manuscript are updated to the recent studies on optimization methods.

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<div>Minor REVISION comments</div> <div>Is the language/English quality of the article suitable for scholarly communications?</div>	<p>The language and English quality of the article are mostly suitable for scholarly communication, but there are minor issues that need revision. These include occasional grammatical errors, inconsistent capitalization (e.g., "response surface methodology" vs. "Response Surface Methodology"), and some awkward sentence structures. Improving the flow and clarity of certain sentences will enhance readability and professionalism.</p> <p><b>Suggestions:</b></p> <ol style="list-style-type: none"><li><b>Grammar and Punctuation:</b> Fix minor grammar issues, such as missing commas and periods in some sections.</li><li><b>Consistency:</b> Ensure consistent capitalization and terminology throughout the manuscript.</li><li><b>Sentence Structure:</b> Simplify overly complex sentences for better clarity and readability.</li></ol> <p>These minor revisions will improve the overall quality and make it more polished for scholarly communication.</p>	<p>Grammatical, punctuation, spelling error and inconsistent capitalization are improved in the current manuscript.</p>
<div>Optional/General comments</div>	<p>The manuscript presents a well-organized and insightful study on optimizing concrete mix design using fractional factorial design and response surface methodology. The topic is relevant and offers practical value to construction engineering. However, refining the language and updating the references will enhance its scholarly impact.</p> <ol style="list-style-type: none"><li>Clarity of Research Objectives: The research objectives are well-stated, but it would be beneficial to clearly define the specific contribution to construction optimization compared to prior studies.</li><li>Abstract: The abstract provides a clear summary, but the technical terms like "Minitab software" could be briefly explained for non-expert readers.</li><li>Problem Statement: The introduction of the problem is solid, but referencing specific statistics about building collapses from recent years would strengthen the urgency of the study.</li><li>Use of Fractional Factorial Design: The methodology could benefit from a more detailed explanation of why the fractional factorial design was preferred over other experimental designs, such as a full factorial approach.</li><li>RSM Justification: While the use of Response Surface Methodology (RSM) is valid, a brief explanation of how RSM complements the fractional factorial design would help clarify the model's robustness.</li><li>Data Presentation: Tables such as Table 3 (ANOVA results) are informative, but more detailed explanations of what each factor means for construction practice would make the results more impactful.</li><li>Significance of Findings: The p-values in the ANOVA table indicate statistical significance, but the interpretation of results, especially interactions between factors, could be expanded to discuss their real-world implications.</li><li>Optimization Discussion: The study achieves optimal conditions for compressive strength, but a brief discussion on the economic or practical feasibility of these conditions would be useful.</li><li>Model Validity: The R-squared value of 100% seems unusually high, potentially indicating overfitting. It would be helpful to discuss how the model was validated and how it performs with unseen data.</li><li>Use of Software: The study mentions Minitab for analysis but does not provide sufficient details about the statistical techniques employed within the software. A short explanation of the methods applied would be useful for replication.</li><li>Experimental Design Limitations: While fractional factorial design minimizes the number of experiments, the paper could elaborate on potential limitations or uncertainties that arise from using a fraction of the full factorial design.</li><li>Cement Type Impact: The study highlights cement type as the most influential factor, but a more in-depth discussion about how this finding aligns or contrasts with existing literature would add depth.</li><li>Practical Implications: While the study provides a comprehensive optimization model, a practical implementation roadmap (e.g., material sourcing or construction industry guidelines) could make the findings more applicable to industry professionals.</li><li>Figures and Charts: Figures such as the contour plots are well-presented, but a brief legend explaining the significance of color gradients in simpler terms would improve accessibility for non-specialist readers.</li><li>References and Citations: Some references, like those by Box and Draper (1959), could be updated with more recent sources to ensure the study reflects the latest advancements in the field.</li></ol> <p>There are no apparent ethical issues in this manuscript. The study involves optimizing construction</p>	

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	<p>materials using statistical methods, and it does not involve human or animal subjects, sensitive data, or conflicts of interest. Thus, the research appears to meet standard ethical guidelines for engineering and construction-related studies.</p> <p>There are no indications of competing interest issues in this manuscript. The authors do not mention any affiliations, funding sources, or relationships that could create a conflict of interest. However, it is always a good practice for the authors to explicitly state that there are no competing interests to ensure transparency.</p> <p>Based on the content I reviewed, there is no immediate indication of plagiarism in the manuscript.</p>	
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PART 2:

	<b>Reviewer’s comment</b>	<b>Author’s comment</b> <i>(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)</i>
<b>Are there ethical issues in this manuscript?</b>	<i>(If yes, Kindly please write down the ethical issues here in details)</i>	