

### Review Form 3

Journal Name:	<a href="#">Asian Research Journal of Mathematics</a>
Manuscript Number:	Ms_ARJOM_129579
Title of the Manuscript:	<b>Mathematical Modelling of Wastewater Treatment</b>
Type of the Article	<b>Minireview Article</b>

#### **General guidelines for the Peer Review process:**

This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty**', provided the manuscript is scientifically robust and technically sound. To know the complete guidelines for the Peer Review process, reviewers are requested to visit this link:

<https://r1.reviewerhub.org/general-editorial-policy/>

#### **Important Policies Regarding Peer Review**

Peer review Comments Approval Policy: <https://r1.reviewerhub.org/peer-review-comments-approval-policy/>

Benefits for Reviewers: <https://r1.reviewerhub.org/benefits-for-reviewers>

#### **PART 1:**

##### **Comments**

	<b>Reviewer's comment</b>	<b>Author's Feedback</b> <i>(Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)</i>
<b>Please write a few sentences regarding the importance of this manuscript for the scientific community. A minimum of 3-4 sentences may be required for this part.</b>	This manuscript is significant for the scientific community as it addresses pressing environmental challenges related to wastewater treatment in densely populated urban areas. By reviewing and analyzing mathematical models, it provides valuable insights into optimizing wastewater treatment processes, including sedimentation, eutrophication, and pollutant reduction. The integration of numerical methods like the finite difference method enhances the understanding of complex wastewater dynamics, offering practical tools for improving treatment efficiency. Furthermore, the study aligns with global sustainability goals, particularly SDG6, and serves as a foundation for future research aimed at developing innovative and sustainable wastewater management solutions.	
<b>Is the title of the article suitable? (If not please suggest an alternative title)</b>	Mathematical Modeling in Wastewater Treatment: A Review and Application	

**Review Form 3**

<p><b>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.</b></p>	<p>The abstract of the article is fairly comprehensive as it outlines the importance of wastewater treatment, discusses the role of mathematical modeling, and mentions the use of the finite difference method for solving complex differential equations. However, there is room for improvement to enhance clarity and provide a more balanced overview. Here are my suggestions:</p> <ol style="list-style-type: none"> <li>1. Include a clearer statement of the specific goal of the paper, such as identifying gaps in existing mathematical models or demonstrating their application in wastewater treatment.</li> <li>2. Briefly mention any major conclusions or insights gained from the review, such as the potential of dynamic models or the effectiveness of the finite difference method.</li> <li>3. Highlight how the study aligns with Sustainable Development Goal 6 (SDG6) to emphasize its global significance.</li> <li>4. Add a sentence about the potential implications or future applications of the study.</li> <li>5. The abstract dedicates a significant portion to explaining the general problem of wastewater treatment. This can be condensed to allow more space for discussing the specific contributions of the manuscript.</li> <li>6. Avoid overly technical descriptions, such as explaining the finite difference method in detail, as this might overwhelm readers who are not experts in the field.</li> </ol>	
<p><b>Is the manuscript scientifically, correct? Please write here.</b></p>	<p>The manuscript appears to be scientifically correct based on its discussion of wastewater treatment processes, mathematical modeling, and numerical simulations. The concepts presented, such as sedimentation, eutrophication, and the application of mathematical models like dynamic and optimization models, are well-established in wastewater treatment research. Additionally, the use of the finite difference method for numerical simulation is appropriate for solving complex differential equations, and the references cited support the scientific validity of the claims.</p> <p>Overall, the manuscript is scientifically correct but requires additional rigor in explaining and validating its methodologies. It would benefit from stronger connections between theoretical concepts and practical applications, as well as a critical discussion of the models' limitations and future directions.</p>	
<p><b>Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.</b></p>	<p>To strengthen the manuscript, consider citing the following topics and corresponding references:</p> <ol style="list-style-type: none"> <li>1. Corominas, L., et al. (2018). "Digital transformation of wastewater treatment plants through artificial intelligence and machine learning: Challenges and opportunities." <i>Water Research</i>.</li> <li>2. Flores-Alsina, X., et al. (2022). "Dynamic modeling for water and wastewater treatment plants: Advances, challenges, and future directions." <i>Journal of Environmental Management</i>.</li> <li>3. Gonzalez-Martinez, S., et al. (2021). "Novel sustainable approaches to domestic wastewater treatment." <i>Science of the Total Environment</i>.</li> <li>4. Smith, V.H., et al. (2021). "Eutrophication: Global challenges and strategies for sustainable aquatic ecosystems." <i>Limnology and Oceanography</i>.</li> <li>5. Zheng, X., et al. (2020). "Numerical methods for solving nonlinear differential equations in wastewater treatment modeling." <i>Applied Mathematics and Computation</i>.</li> </ol>	
<p><b>Is the language/English quality of the article suitable for scholarly communications?</b></p>	<p>The language and English quality of the manuscript are generally suitable for scholarly communication, but there are areas that require improvement for clarity, flow, and grammatical accuracy. Here's a detailed assessment:</p> <ol style="list-style-type: none"> <li>1. There are several grammatical issues, such as sentence fragments, awkward phrasing, and incorrect verb tenses (e.g., "Phenomena and problems that occur in wastewater treatment plants can be modelled mathematically" could be improved for clarity and flow).</li> <li>2. Some sentences repeat the same information (e.g., discussing the role of mathematical modeling multiple times in similar ways).</li> <li>3. Certain sentences are overly lengthy and could be simplified for better readability.</li> </ol>	

**Review Form 3**

<p><b>Optional/General</b> comments</p>	<p><b>Reviewer.</b> In the submitted paper, the authors present a study on " <b>Mathematical Modelling of Wastewater Treatment.</b>" The manuscript was thoroughly reviewed and is well-written from an English language standpoint, with sentences that convey meaning clearly and without ambiguity. However, some shortcomings must be addressed point by point before the manuscript can be published. It is encouraged that the respected authors carefully consider these suggestions to ensure their study reaches its full potential:</p> <ol style="list-style-type: none"> <li>1. The manuscript could elaborate more on how the mathematical models can be implemented or tested in real-world scenarios, particularly at the Sewon WWTP.</li> <li>2. The inclusion of Figure 1 (Sewon WWTP) is helpful but lacks a detailed analysis or description of its operational aspects.</li> <li>3. The manuscript would benefit from thorough proofreading to address grammatical errors and improve readability.</li> <li>4. Some references seem incomplete or improperly formatted. For instance, "Arcowa (2018)" and others lack proper citation formatting.</li> <li>5. Graphical abstract must be included.</li> <li>6. It is advised to add a paragraph that describes how the article is sectioned in the introduction.</li> <li>7. It is strongly recommended to include highlights in the manuscript.</li> </ol>	
---	---	--

**PART 2:**

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

**Reviewer Details**

<p>Name:</p>	<p><b>Pravesh Chandra</b></p>
<p>Department, University &amp; Country</p>	<p><b>Moradabad Institute of Technology, India</b></p>