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| Book Name: | [**Engineering Research: Perspectives on Recent Advances**](https://www.bookpi.org/bookstore/product/engineering-research-perspectives-on-recent-advances-vol-1/) |
| Manuscript Number: | **Ms\_BPR\_5456** |
| Title of the Manuscript:  | **Dynamic Analysis of Single-Degree-of-Freedom Mechanical Systems: Investigating Free Vibration Characteristics Through Theory, Experimentation, and Numerical Simulation** |
| Type of the Article | **Book Chapter** |

**Special note:**

**A research paper already published in a journal can be published as a Book Chapter in an expanded form with proper copyright approval.**

**Source Article:**

**This chapter is an extended version of the article published by the same author(s) in the following journal.**

**International Journal of Scientific and Research Publications, 15(1): 83-93, 2025.**

**DOI:** [**http://dx.doi.org/10.29322/IJSRP.15.01.2025.p15712**](http://dx.doi.org/10.29322/IJSRP.15.01.2025.p15712)

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| PART 1: Comments |
|  | Reviewer’s comment**Artificial Intelligence (AI) generated or assisted review comments are strictly prohibited during peer review.** | 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. A minimum of 3-4 sentences may be required for this part.** |  |  |
| **Is the title of the article suitable?****(If not please suggest an alternative title)** |  |  |
| 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. |  |  |
| **Is the manuscript scientifically, correct? Please write here.**  |  |  |
| **Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.****-** |  |  |
| Is the language/English quality of the article suitable for scholarly communications? |  |  |
| Optional/General comments | Clear Objectives and Relevance* + The research objectives are well-defined: exploring natural frequency, damping ratio, and transient behavior.

Three-Pronged Methodology* + The use of **theory, experiment, and simulation** (Simulink) offers a holistic approach to understanding dynamic behavior.
	+ This triangulation increases the **validity** of the findings and enhances learning for students and researchers alike.

Detailed Experimental Design* + The use of **Sanderson's vibration apparatus** with varying spring stiffness and mass provides a solid practical foundation.
	+ Includes different damping scenarios (dashpot open/closed), demonstrating clear cause-effect behavior.

Strong Integration of Results* + Experimental results align well with theoretical and simulation predictions.
	+ The tables and figures (though formatting could be improved) provide meaningful quantitative comparisons.

Practical Implications Highlighted* + Discussion effectively connects results to **real-world engineering applications**, such as machinery vibration control and structural design.

Missing Discussion of Errors/Uncertainty* + While there is mention of human error, the paper would benefit from a dedicated **error analysis** or discussion of **sources of uncertainty** in measurements.
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| **PART 2:**  |
|  | Reviewer’s comment | Author’s comment *(if agreed with the 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 detail)* |  |

**Reviewer details:**

**Khalid Waleed Abd AL-Kaream, University of Technology, Iraq**