Review of: "Optimized Material Removal and Tool Wear Rates in Milling API 5ST TS-90 Alloy: AI-Driven Optimization and Modelling with ANN, ANFIS, and RSM"

Amjid Khan[1]

1 Oklahoma State University

Potential competing interests: No potential competing interests to declare.

This paper is quite captivating, and I highly recommend its acceptance for publication in this journal. Nevertheless, there are a few minor points that merit further discussion.

Introduction Section: The provided introduction elucidates the significance of productivity and cost-effectiveness within the manufacturing domain, with a specific focus on the metal-cutting industry and the role of machining techniques in achieving these objectives. It also introduces the critical factors of material removal rate and tool wear rate in milling activities. The text frequently underscores the importance of productivity, cost reduction, and tool wear using similar phrases throughout. This repetition can create redundancy and would benefit from more diverse and concise wording.

Materials and Method: While the text offers detailed information regarding the specimen and cutting tool, it lacks an explanation for the rationale behind selecting these specific materials and tools. Providing this rationale would enhance the reader's comprehension of the study. The text mentions that the experiment was conducted under "dry machining conditions" but does not clarify this term. Dry machining typically implies the absence of cutting fluids, but it would be helpful to provide further details about the implications of this choice and the reasoning behind it. The text does not mention whether the experiment was replicated or if any control specimens were utilized. This information is vital for evaluating the reliability of the results. In the research design section, it is essential to include a complete ANOVA table to demonstrate the model's significance and accuracy. Additionally, please clarify the reasons for selecting CCD and RSM and include the ANOVA tables for both, as well as the model residual error.

Results: For Figures 2, 3, 9, and 10, please present both Residuals-actual run order and Residuals-predicted plots, which reveal the distribution of residuals based on run order and predicted data.

In the RSM three-dimensional plots, report the curvature based on the ANOVA table, including the mean squared error (MSE).

Conclusion: Given the depth of your work, the conclusion would benefit from a more comprehensive summary of the data obtained from RSM, CCD, and neural networks.