

HARMONY IN PROGRESS:

**INTEGRATING SCIENCE, TECHNOLOGY,
AND
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YSS009 - GreenMOORA: A WEB-BASED PYTHON TOOL FOR BIG DATA MCDM IN SUSTAINABILITY AND INNOVATION IMPACT

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ABSTRACT

GreenMOORA is a novel decision support tool and toolkit used to prioritize projects, innovations or regions based on a number of sustainability factors. Traditional decision-making procedures often face difficulties in reconciling competing goals and maintaining open, evidence-based evaluations. This system combines the functionality of big data with the Multi-Objective Optimization on the Basis of Ratio Analysis (MOORA) approach that has already been implemented in different areas including the selection of sustainable suppliers (Mubin et al., 2024). It has also been well used in terms of educational performance tests, which demonstrates its flexibility in various fields (Sinaga et al., 2022). Another key feature of GreenMOORA is its interactive interface. Instead of relying on preloaded information, it allows users to upload custom datasets, assign weights to criteria, and define benefit or cost indicators to generate normalized matrices, weighted scores, and final rankings. Also, the system offers an online graphical representation of MOORA scores and ranking that enables decision-makers to understand complex data in a clear manner, and make informed decisions. GreenMOORA can be greatly beneficial in aiding sustainability-oriented decision-making in any industry, academia, or policy-making context as it will enable the decision-maker to evaluate projects (as well as technologies or regions) in terms of their environmental, social, and economical indicators with ease. GreenMOORA increases decision-making efficiency and reliability by transforming complex multi-criteria analyses into an objective, transparent, and reproducible tool based on data. Its flexibility across diverse datasets also enhances its commercialization potential, making it a viable solution for organizations seeking to maximize innovation and sustainability outcomes.

Keywords – sustainability, MOORA method, interactive platform, real-time visualization, commercialization potential

INTRODUCTION

GreenMOORA is a decision-support tool based on the MOORA method. It ranks alternatives—such as innovations, countries, or projects—using sustainability and impact criteria. Built with Streamlit and powered by Big Data & MCDM, it ensures transparent, simple, and reliable evaluation. The problem statement is decision makers face challenges in evaluating sustainability and innovation impact due to multiple and complex criteria. The traditional evaluation methods challenges is including Difficulty evaluating projects with

multiple conflicting sustainability criteria, lack of transparent, data-driven decision tools for sustainability impact and less effective for projects, regions, or technologies.

OBJECTIVE

To develop a web-based sustainability decision support tool that integrates the MOORA method with big data capabilities, enabling users to upload their own data, assign weights to criteria, and define benefit or cost indicators, thereby generating transparent ranked assessments.

DESCRIPTION OF THE PROJECT

GreenMOORA is a web-based ranking tool of projects, innovations or regions on the basis of sustainability. It allows its users to import their own data rather than having preloaded data sets. The users are able to give weights and place each criterion as a benefit or a cost. The system is based on the MOORA methodology to determine the normalized scores and ranking. The results are well displayed in clear tables and interactive charts to understand. The rankings may also be downloaded by the users to report or to be further analysed. The link of this website is : <https://greenmoora-azh.streamlit.app/>

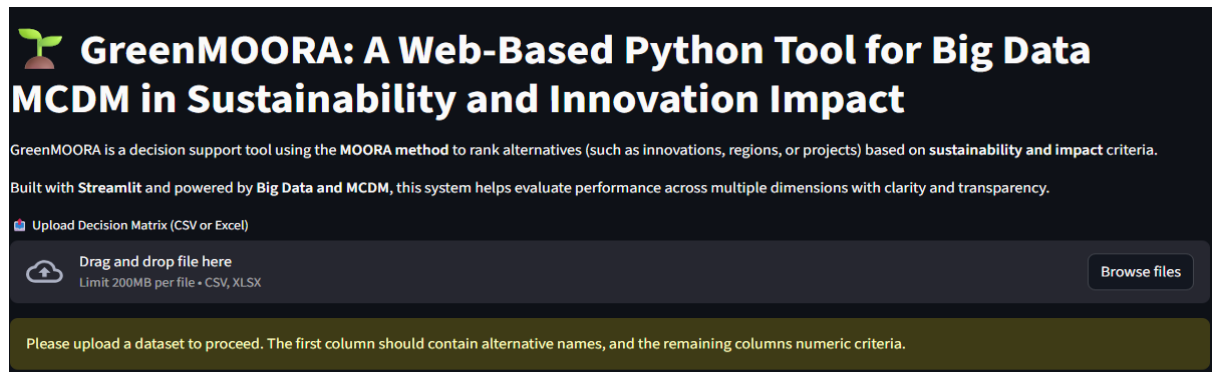


Figure 1: GreenMOORA input interface



Final Ranking (MOORA)

	Alternative	MOORA Score	Rank
3	Project D	0.502461	1
2	Project C	0.499488	2
1	Project B	0.496059	3
0	Project A	0.495913	4

Figure 2: GreenMOORA final output

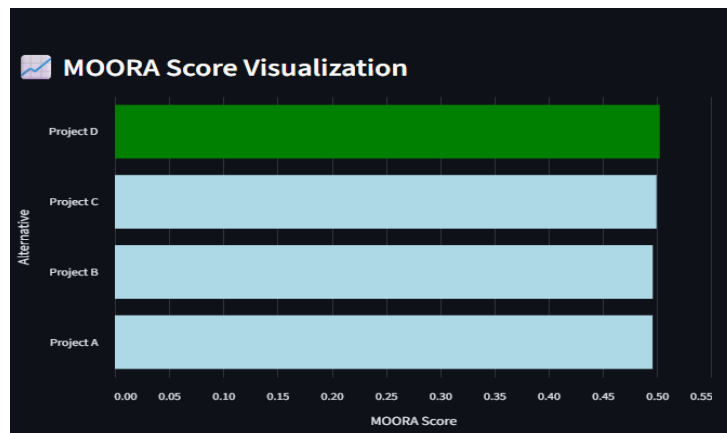


Figure 3: GreenMOORA Score Visualization Chart

NOVELTY

The novelty of this project is it combines MOORA with interactive web-based visualization. Other than that, it allows users to input their own datasets for flexible evaluation. Lastly, this project provides automated ranking and downloadable results

CONCLUSION

In conclusion, GreenMOORA is a safe and transparent method of appraising the projects and innovations according to the sustainability criteria. It has a flexible design that can be used as a government, corporate, or academic application that aids in the evaluation of sustainable projects and ranking of innovation services. It has a wide application and ease of use hence presents a high potential to be commercialised as SaaS or consultancy.

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