

INTISARI

Dalam pengelolaan sumber daya bersama, praktik seperti *overfishing* sering kali muncul sebagai manifestasi dari fenomena *tragedy of the commons*. Untuk memahami perilaku di balik masalah tersebut, bidang *Behavioral Operations Research* (BOR) memberikan perspektif penting dengan menekankan analisis mengenai bagaimana faktor manusia memengaruhi proses pengambilan keputusan dalam sistem yang kompleks dan penuh ketidakpastian. Penelitian ini bertujuan untuk menginvestigasi pengaruh dua faktor perilaku utama, yaitu *risk attitude* dan kesadaran lingkungan, baik secara individu maupun dalam interaksi antarpartisipan, terhadap performa profitabilitas dan keberlanjutan. Untuk mencapai tujuan tersebut, penelitian ini menggunakan simulasi *system dynamics* bernama FISHBANK, yang merepresentasikan dinamika eksploitasi sumber daya ikan secara kompetitif.

Penelitian melibatkan 48 mahasiswa yang dikelompokkan berdasarkan *risk attitude* (*risk seeking* dan *risk averse*) serta kesadaran lingkungan (kesadaran tinggi dan kesadaran rendah) melalui kuesioner. Simulasi FISHBANK dijalankan oleh dua partisipan, di mana tiap peserta selama 20 tahun harus mengabil keputusan terkait jumlah kapal yang dimiliki serta alokasi kapal tersebut tiap tahunnya. Setiap partisipan dipasangkan dengan partisipan lain yang memiliki *treatment* berbeda. Performa profitabilitas diukur melalui *final total assets*, sedangkan keberlanjutan diukur dengan *average fish stock*. Data yang diperoleh melalui simulasi dianalisis dengan berbagai metode statistika seperti ANOVA, Kruskal Wallis dan Dunn's post hoc test.

Hasil penelitian menunjukkan bahwa risk attitude berpengaruh signifikan terhadap profitabilitas ($p = 0{,}014$), dengan partisipan *risk seeking* memperoleh total aset lebih tinggi dibandingkan *risk averse*. Sementara itu, kesadaran lingkungan tidak berpengaruh signifikan ($p = 0{,}174$), meskipun partisipan dengan kesadaran tinggi mencatat aset lebih besar. Interaksi kedua faktor juga tidak signifikan ($p = 0{,}859$), tetapi kelompok A (*risk seeking*–kesadaran tinggi) berbeda signifikan dengan kelompok D (*risk averse*–kesadaran rendah). Pada aspek keberlanjutan, baik faktor tunggal maupun interaksi tidak berpengaruh signifikan, namun kombinasi AB (*risk seeking* - kesadaran tinggi dan *risk seeking* - kesadaran rendah) menghasilkan stok ikan lebih tinggi dibandingkan kombinasi CD (*risk averse* – kesadaran tinggi dan *risk averse* - kesadaran rendah) ($p = 0{,}04$). Temuan ini menegaskan bahwa profitabilitas lebih ditentukan oleh risk attitude, sedangkan keberlanjutan dipengaruhi oleh dinamika interaksi antar partisipan. Kesadaran lingkungan saja tidak cukup mengubah perilaku keputusan dalam situasi kompetitif dan ekonomis.

Kata Kunci: *Behavioral Operations Research* (BOR), *Risk Attitude*, *Environmental Awareness*, Performa Keputusan, *System Dynamics,* FISHBANK.

ABSTRACT

In the management of common-pool resources, practices such as overfishing often emerge as manifestations of the tragedy of the commons. To understand the behavioral drivers behind this issue, the field of Behavioral Operations Research (BOR) provides a valuable perspective by emphasizing how human factors shape decision-making processes in complex and uncertain systems. This study aims to investigate the influence of two key behavioral factors—risk attitude and environmental awareness—both individually and through participant interactions, on profitability and sustainability performance. To achieve this, the research employs a system dynamics–based simulation known as FISHBANK, which represents the dynamics of competitive fishery exploitation.

The study involved 48 students classified into groups based on their risk attitude (risk-seeking and risk-averse) and environmental awareness (high and low) through a questionnaire. The FISHBANK simulation was conducted in pairs, where each participant, over a 20-year horizon, had to decide the number of vessels owned and their allocation each year. Each participant was matched with a counterpart from a different treatment group. Profitability performance was measured by final total assets, while sustainability performance was assessed by average fish stock. The simulation data were analyzed using various statistical methods, including ANOVA, the Kruskal–Wallis test, and Dunn's post hoc test.

The results indicate that risk attitude significantly influences profitability ($p = 0.014$), with risk-seeking participants achieving higher total assets compared to their risk-averse counterparts. In contrast, environmental awareness showed no significant effect ($p = 0.174$), although participants with higher awareness recorded greater assets. The interaction between the two factors was also not significant ($p = 0.859$), yet Group A (risk-seeking with high awareness) differed significantly from Group D (risk-averse with low awareness). Regarding sustainability, neither individual factors nor their interaction were significant; however, the AB combination (risk-seeking with high and low awareness) yielded a higher average fish stock compared to the CD combination (risk-averse with high and low awareness) ($p = 0.04$). These findings highlight that profitability is primarily determined by individual risk attitude, whereas sustainability is shaped by the dynamics of participant interactions. Environmental awareness alone is insufficient to alter decision-making behavior, particularly under competitive and economic pressures.

Keywords: *Behavioral Operations Research (BOR), risk attitude, environmental awareness, decision performance, system dynamics, FISHBANK.*