


Chapter 2

Deploying OR/MS Tools for Decision Making in the Age of Artificial Intelligence and Sustainable Development Goals: Social, Behavioral, and Technological Perspectives

Abdul-Rahim Ahmad

 <https://orcid.org/0000-0001-7923-0105>

King Faisal University, Saudi Arabia

Yousuf Ahmad

University of British Columbia, Canada

Juwairiah Ahmad

Southern New Hampshire University, USA

Omar Ahmad

Payactiv, USA

Ibtihaj Ahmad

University of Nevada, USA

DOI: 10.4018/979-8-3373-0139-6.ch002

ABSTRACT

Operations Research and Management Sciences (OR/MS) methodologies have shown significant promise as well as success in solving and unraveling a variety of operational and tactical problems. However, this success is not matched in solving complex political, social, socio-technical, and strategic decision problems. Such an apparent lack of efficacy has been attributed to a variety of factors. We take behavioral and technological perspectives of opportunities and impediments in the adoption of OR/MS tools in a wider realm of problem-solving and decision-making. We also look at various limitations, and sources of limitations, of OR/MS approaches. We discussed some ideas on how to make OR/MS tools more effective through a combination of OR/MS with systems thinking, soft decision-making, and Artificial Intelligence (AI). We discuss how using AI in conjunction with OR/MS can help make decision-making more efficacious, leading to fair, equitable, robust, and sustainable development choices.

1. INTRODUCTION

The disciplines of Operations Research and Management Sciences (OR/MS) have been defined in various ways by various researchers and organizations. One concise definition is: “[OR/MS are the disciplines] of applying advanced analytical methods to help make better decisions” (INFORMS, 2025). For about a century, OR/MS has been growing in complexity and usefulness. Indeed, OR/MS brought with it new technologies and paradigms to aid effective decision-making (Taylor, 2018). More importantly, various decision-making paradigms and technologies have enhanced the effectiveness of interdisciplinary problem-solving teams and added value and efficacy of OR/MS tools (INFORMS, 2025). The proliferation of information technology further facilitated the use of OR/MS tools by more people, rendering an increased capability to add value through OR/MS tools. This impact of information technology on OR/MS discipline is aptly expressed by the manner in which The Institute for Operations Research and the Management Sciences (INFORMS) defines OR/MS: “[OR/MS are] the professional disciplines that deal with the application of information technology for informed decision-making” (INFORMS, 2025).

Factually, OR/MS disciplines are deemed responsible for substantial improvement in efficiency, efficacy, and sustainability of industry, government, and R&D (INFORMS, 2025). Nevertheless, the traditional style of preaching and teaching OR/MS made many people perceive OR/MS as a panacea in real-world problem-solving. Ironically, some OR/MS practitioners may even advocate it as the rational

36 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: www.igi-global.com/chapter/deploying-orms-tools-for-decision-making-in-the-age-of-artificial-intelligence-and-sustainable-development-goals/379938

Related Content

Disaggregating Renewable and Nonrenewable Energy Consumption in the Energy Growth Nexus: Evidence From the Panel Frequency Domain Approach in OECD Countries

Veli Yilanci, Murat Aslanand Önder Özgür (2023). *Perspectives on Ecological Degradation and Technological Progress* (pp. 205-228).

www.irma-international.org/chapter/disaggregating-renewable-and-nonrenewable-energy-consumption-in-the-energy-growth-nexus/327108

Role and Importance of Nature-Based Health Tourism in the Himalayan Region: With Special Reference to Different Natural Health Techniques

Arunesh Parasharand Prachi Agarwal (2024). *Mountain Tourism and Ecological Impacts: Himalayan Region and Beyond* (pp. 143-157).

www.irma-international.org/chapter/role-and-importance-of-nature-based-health-tourism-in-the-himalayan-region/343141

Introduction to Sustainable Prototyping

Romdhane Ben Khalifa (2026). *Materials, Techniques, and Ecological Impact of Sustainable Prototyping* (pp. 1-30).

www.irma-international.org/chapter/introduction-to-sustainable-prototyping/399024

Assessment of Factors Responsible for Promoting Religious Tourism in the Himalayan Region: Special Reference to Dev Bhoomi, Uttarakhand

Dillip Kumar Kumar Dasand Susanta Ranjan Chaini (2024). *Mountain Tourism and Ecological Impacts: Himalayan Region and Beyond* (pp. 25-34).

www.irma-international.org/chapter/assessment-of-factors-responsible-for-promoting-religious-tourism-in-the-himalayan-region/343130

Educating the Local Population About the Need of Environmental Protection
Through Participatory Educational Theatre (PET) With a Focus on
Sundarbans: Participatory Educational Theatre and Environmental Protection

Raghav Prakash, Aliya Nazam and Abhiroop Chowdhury (2024). *Fostering an Ecological Shift Through Effective Environmental Education* (pp. 290-306).

www.irma-international.org/chapter/educating-the-local-population-about-the-need-of-environmental-protection-through-participatory-educational-theatre-pet-with-a-focus-on-sundarbans/349101