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Angappa Gunasekaran · Jai Kishore Sharma ·
Samarjit Kar
Editors

Applications of Operational Research in Business and Industries


Proceedings of 54th Annual Conference
of ORSI

 Springer

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Preface

The International Conference on Applications of Operational Research in Business and Industries (AORBI 2021), 54th Annual Convention of ORSI, was organized at Indore during December 17–19, 2021. AORBI 2021 brought together leading international experts on production systems and business from academia, industry, and government to discuss the issues in intelligent manufacturing, operations management, financial management, supply chain management, and Industry 4.0 in the artificial intelligence era.

Operations research (OR) is an interesting and popularly used technique in activities involving grocery arrangement to military applications. Broadly, the OR allows problem-solving and decision-making by using systematic approaches. Engineering, management, and medical applications widely adopt OR techniques for reaching reasonable solutions. The conference provided a forum for scientists, researchers, software developers, and practitioners to exchange ideas and approaches, to present research findings and state-of-the-art solutions, to share their experience on potentials and limits, and to open new avenues of research and development, on all issues and topics related to operations research and applications in business and industry.

AORBI 2021 received overwhelming submissions covering different areas related to OR theory and its applications. With the help of our program committee and reviewers, these submissions went through an extensive peer-review process. This volume comprises thirty-two accepted papers, providing a comprehensive overview of the current research and future scope in OR models and applications.

The volume covers wide applications from the business and industry domains, including medical, engineering, and management. Broadly, the papers are based on two broad themes such as OR theories and models (for instance, optimization and control, combinatorial optimization, queuing theory, resource allocation models, linear and nonlinear programming models, dynamic optimization, evolutionary optimization, multi-objective decision models) and applications of OR models in real-life problems (domain-specific and interdisciplinary).

The important highlight of the current volume lies in the core theme of blending computing paradigms with OR. Specifically, industry-oriented computing paradigms such as big data, machine learning, and data science are some of the focus areas of the

present volume, and an amalgamation of these concepts with OR forms an attractive book that adheres to the emerging hot zones of research and development. These core themes in the present volume will not only help academicians to get an insight into the research advancement in OR but will also support practitioners in organizations to try these techniques for effectively solving their problems.

Bakersfield, USA
Noida, India
Durgapur, India

Angappa Gunasekaran
Jai Kishore Sharma
Samarjit Kar

Acknowledgments

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Samarjit Kar
J. K. Sharma
Angappa Gunasekaran

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Applications of Operational Research in Business and Industries pp 21–34

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Investigate the Reason for Students' Absenteeism in Engineering College in Fuzzy MCDM Environment

[Sukarna Dey Mondal](#) , [Dipendra Nath Ghosh](#) & [Pabitra Kumar Dey](#)

Conference paper | [First Online: 22 May 2023](#)

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Abstract

For the progress of any nation, education system always plays a dynamic role. Best academic institutes are national assets, and students are major assets of any institute. However, today's students are less focused on their studies. As an effect, they are avoiding their important classes due to various reasons. A huge number of students are absent from class which may be destroyed their careers. These are the well-known images of the school and colleges. When a student is frequently

absent from class, it has an unfavorable outcome on their academic performance and a few must repeat a grade level. Therefore, it is critical to conduct research that will point the way to understand the key that minimizes student absenteeism. So, an effort was made here to assess some criteria and sub-criteria using analytical hierarchy process (AHP) and techniques for order preference by similarity to ideal solution (TOPSIS) in Type 1 interval fuzzy (T1-IF) and Type 2 interval fuzzy (T2-IF) atmospheres for alternative ranking that depicts student absenteeism, as well as to make comparisons of T1-IF set and T2-IF set. In the end, the group decision-making (GDM) method is used. Questionnaire sessions are used to identify the major causes of student absenteeism. Finally, the outcome of the study builds a more practical way out to acknowledge the actual alternative which eradicates student absenteeism according to pre-assigned criteria and sub-criteria.

Keywords

Student's absenteeism T1-IF set T2-IF set

AHP TOPSIS GDM method

Spearman's rank correlation coefficient (SRCC)

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