







The Journal of
Operations Research, Statistics,
Econometrics and Management Information Systems

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 <https://alphanumericjournal.com/>
 editor@alphanumericjournal.com
 +90 (212) 440 00 00 ext. 13219

E-ISSN 2148-2225

Publication Type Periodical

Indexing & Abstracting ULAKBIM TR Index
EconLit
DOAJ
RePEC
IDEAS
ERIHPlus
SOBIAD



Authors bear responsibility for the content of their published articles.
The publication language of the journal is English.
This is a scholarly, international, peer-reviewed and open-access journal
published annually in June and December.



The Journal of
Operations Research, Statistics,
Econometrics and Management Information Systems

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Foreword

It is with great pleasure that we introduce this special issue of the Alphanumeric Journal (2148-2225), dedicated to celebrating 40 years of Grey Systems Theory (GST) and its remarkable contributions to science, engineering, and management. Since its inception in the early 1980s, Grey Systems Theory has evolved into a powerful and versatile framework for analyzing uncertainty and providing innovative solutions to complex problems across a wide range of disciplines. The foundations of GST were laid in 1982, when Professor Deng Ju-Long published the pioneering research article "Control Problems of Grey Systems," which introduced the fundamental concepts of the theory. Over the past four decades, GST has undergone significant advancements, with researchers and scholars worldwide expanding its scope and applications. Today, GST stands as a vital alternative method within system theories, particularly in addressing problems characterized by partial knowledge and incomplete information.

This special issue marks a milestone in the journey of GST, highlighting its profound impact on uncertainty analysis, system sciences, engineering innovations, and complex decision-making. We are especially proud to note the support of the Grey Systems Society of Türkiye (GSST), a branch of The International Association of Grey Systems and Uncertain Analysis (IAGSUA). Their efforts in spreading the knowledge and applications of GST have been instrumental in the growth and recognition of this field on a global scale.

The articles featured in this issue explore a diverse range of topics, showcasing the theoretical advancements and practical implementations of GST in fields such as technology, innovation management, and complex equipment development. These contributions not only reflect the richness of GST but also underline its potential to address the challenges posed by rapidly advancing technologies and uncertain environments.

As we commemorate the 40th Anniversary of Grey Systems Theory, we extend our gratitude to the authors, reviewers, and the editorial team who have made this special issue possible. We also express our appreciation to all researchers and practitioners who continue to push the boundaries of GST, ensuring its relevance and adaptability for future challenges.

We hope this special issue serves as both a tribute to the history of GST and an inspiration for its continued development. May it encourage further exploration and innovation in addressing the complexities of modern systems. We would like to warmly welcome you all to the International Congress of GSUA 2025, which we are delighted to organize in Antalya, Türkiye and finally thank to all authors in the special issue and also Alphanumeric Journal Editorial Board for their interest and support.

Sincerely,

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