Editorial

Ernesto Leon-Castro*

Facultad de Ciencias Económicas y Administrativas,
Universidad Católica de la Santísima Concepción,
Alonso de Ribera 2850, Concepción, Chile
Email: eleon@ucsc.cl
*Corresponding author

Fabio Raul Blanco-Mesa

Facultad de Ciencias Económicas y Administrativas,
Escuela de Administración de Empresas,
Universidad Pedagógica y Tecnológica de Colombia,
Av. Central del Norte, 39-115, 150001, Tunja, Colombia
Email: fabio.blanco01@uptc.edu.co

Anna Maria Gil-Lafuente

Facultat d'Economia i Empresa,
Universitat de Barcelona,
Avinguda Diagonal, 690, 08034, Barcelona, Spain
Email: amgil@ub.edu

Jose Maria Merigo Lindahl

School of Information, Systems and Modelling,
Faculty of Engineering and Information Technology,
University of Technology Sydney,
81 Broadway, Ultimo, NSW 2007, Australia
and
Departamento de Control de Gestión y Sistemas de Información,
Universidad de Chile,
Av. Diagonal Paraguay 257, 8330015, Santiago, Chile
Email: jmerigo@fen.uchile.cl

Biographical notes: Ernesto Leon-Castro is a Professor at Universidad Católica de la Santísima Concepcion (Chile). He holds a PhD in Management from University of Occidente. His interest in research are in aggregation operators, decision making, finance, economics, computational intelligence and other related topics He has published some papers in different journals, books and proceedings, including journals such as *Applied Soft Computing*, *Technological and Economic Development of Economy*, *International Journal of Intelligent Systems*, *Fuzzy Sets* and *Systems and Mathematics*. Also, has been guest editor in special issues of WoS and Scopus journals.

Fabio Raul Blanco-Mesa is an international Doctor in Business from the Department of Economics and Business Organization of the University of Barcelona. With several publications of scientific articles in international journals, book chapters and conference proceedings, such as: *Knowledge Based Systems*, *Technological and Economic Development of Economy*, *Soft Computing*, *Journal of Intelligent in Fuzzy Systems* and *Kybernetes*. Also, he developed revision, control and verification tasks for different international journals. His research interests are in issues related to decision making, competitiveness, interest groups, entrepreneurship, regional development, strategic analysis, diffuse systems and aggregation operators applied to management, uncertainty, and bibliometrics.

Anna Maria Gil-Lafuente is a Full Professor in the Department of Business Administration at the University of Barcelona (Spain). She has published more than 400 papers in journals, books and conference proceedings. She is Editor-in-Chief of Nova Sciences Collection Computational Intelligence in Engineering, Economics, and Management and co-Editor-in-Chief of eight journals published by the Association for Modeling and Simulation in Enterprises (AMSE). She is on the editorial board of several journals and scientific committees. She is currently interested in decision making, aggregation operators, fuzzy systems, uncertainty and finance.

Jose Maria Merigo Lindahl (a highly cited researcher in computer science) is a Full Professor at the School of Systems, Management and Leadership at the Faculty of Engineering and Information Technology at the University of Technology Sydney and part-time Full Professor at the Department of Management Control and Information Systems at the School of Economics and Business at the University of Chile. He has published more than 400 articles in journals, books and conference proceedings. He is on the editorial board of several journals. He has also been a guest editor for several international journals, member of the scientific committee of several conferences and reviewer in a wide range of international journals. He is currently interested in decision making, aggregation operators, computational intelligence, bibliometrics and applications in business and economics.

1 Evolution of fuzzy decision-making in innovation, sustainability, business and economics

Among the main problems in decision-making is that the information is usually incomplete. Even when a lot of data has been obtained, some issues such as subjectivity, imprecise and vague data are presented. The action that should be taken is not always accurate (Blanco-Mesa et al., 2017). One of the approaches that try to solve this problem was presented by Zadeh (1965) with fuzzy sets. Many contributions have been made in different areas like engineering, mathematics, computer science, economics, management, and social science, among others (Blanco-Mesa et al., 2019; Kahraman et al., 2016).

The idea is that decision-making has moved from probabilities to possibilities, in which the most important aspect is the meaning of the information measured (Zadeh, 1978, 1999). The attitude towards the data and the uncertainty of the human behaviour led to a new decision analysis field that is fuzzy decision-making (Cheng and Hwang, 1992).

Since the implementation of the fuzzy logic (Zadeh, 1988) in the decision-making process, a lot of extensions have been developed, incorporating different elements and methods to analyses information, such as the case of extensions of technique for order of preference by similarity to ideal solution (TOPSIS) (Chen, 2000), linguistic analysis (Herrera and Herrera-Viedma, 2000), decisions under fuzzy environments (Bellman and Zadeh, 1970), hierarchy process (Vaidya and Kumar, 2006), neural networks (Simpson, 1992), among many others.

In this sense, fuzzy decision-making focuses on giving importance to the meaning and significance of the information based on the data collected's criteria and characteristics, where multi-criteria, multi-objective and uncertain decisions stand out (Blanco-Mesa et al., 2017). Under this approach, different applications have been proposed in different research areas, including social sciences such as business and economics. These advances in research have been focused on the blockchain (Ozdemir et al., 2020), circular economy (Kazancoglu et al., 2021), big data (Yasmin et al., 2020), risk (Karamoozian and Wu, 2020), sustainability (Rostamnezhad et al., 2020; Seo et al., 2004; Tsai and Bui, 2020; Balaman and Selim, 2016), entrepreneurship (Blanco-Mesa et al., 2018; Dhochak and Doliya, 2020), business intelligence (Mavi and Standing, 2018), finance (Espinoza-Audelo et al., 2020; Fonseca-Cifuentes et al., 2020), innovation (Alfaro-Garcia et al., 2017, 2015) and so on.

These applications stand out for dealing with problems that classical mathematical tools do not provide an optimal answer. They are characterised by the fact that they can parameterise natural language in formal models and offer solutions in this same language. Therefore, we can observe that the investigations carried out under these models give answers within interval values rather than deterministic values, allowing for a broader range of solutions.

2 About the papers in this special issue

The special issue consists of five papers presented in the II International Congress in Innovation and Sustainability held in Bogota, Colombia, from 4–5 October 2018. The best papers were invited to be presented in the special issue. A peer-review process has been done for all the articles.

The papers in the special issue present interesting studies in fuzzy decision-making, innovation, and sustainability in business and economics. Like the factors of innovation in the subsector of human healthcare, a case of study in social innovation, a proposal for monitor the entrepreneurship variables, a proposal of a protocol for decision-making in responsible financial innovation, and a methodology for ranking from a fuzzy outranking relation. All of the papers present new proposals that are interesting to consider for the companies, government and future research.

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