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BOOK REVIEW

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Abstract:

Book review of "Practical Decision Making: An Introduction to the Analytic Hierarchy Process (AHP) Using Super Decisions v2" written by Enrique Mu and Milagros Pereyra-Rojas (2017). Springer Nature. ISBN: 978-3-319-33860-6; ISBN: 978-3-319-33861-3 (eBook); DOI: 10.1007/978-3-319-33861-3.

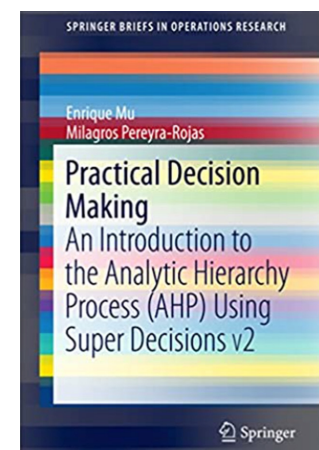
JEL classification: D70

Everything we do in life is based on previous decision. We are complex beings who differ (by age, gender, education, experience, and so on), and our decisions determine whether we succeed or fail. Employees are an organization's most valuable asset, and based on decisions taken, they can gain a competitive edge, be successful, and thrive in the long run, but they can also fail. How can we, as individuals and as members of organizations, cope more effectively with decision-making when numerous factors must be examined and we must choose among alternatives, prioritize, and forecast?

In 1980, the eminent professor Thomas L. Saaty introduced the Analytic Hierarchy Process, a multi-criteria decision making (MCDM) method that can deal with complex decisions by structuring the problem as a hierarchy (with goal, criteria, and alternatives), comparing the criteria regarding the goal, and the alternatives regarding each criterion using his scale of relative importance with 9 degrees; deriving priorities for criteria, local priorities for alternatives; overall priorities for the alternatives; check the consistency in the pairwise comparisons; conduct sensitivity analysis, and make the final decision. This methodology has been widely employed around the world since its inception. The AHP is the most commonly used MCDM method, according to a bibliography by Mardani et al. (2015), which was based on 393 peer-reviewed articles published in journals between 2000 and 2014 (extracted from Web of Science).

The theory of the AHP is brilliantly explained by Saaty (2012) and Brunnelli (2015), but there was a gap in the existing literature for a book that would teach readers, particularly corporate executives and students who lack operational research (OR) knowledge and skills, how to apply this leading MCDM methodology in practical applications. As a result, Enrique Mu (who collaborated with the original author of AHP and was mentored by him) and Milagros Pereyra-Rojas created a masterpiece named "Practical Decision Making: An Introduction to the Analytic Hierarchy Process (AHP) Using Super Decisions v2." Each page of this book reflects their 15 years of expertise teaching and practicing AHP.

The book is structured into three parts (Part I is Basic, Part II is Intermediate, and Part III is Advanced). Part I consists of 3 chapters. In Chapter 1, it is explained why there is a need for another method of decision-making. AHP decisions are straightforward (easy to understand and use), effective (the consistency is checked and adjusted where needed) and safe (the methodology is proven, i.e. used in more than 50 countries at the global level) (Mu and Pereyra-Rojas 2017). In addition, in AHP, both tangible and intangible factors can be used. Its popularity is growing due to the development of software packages that allow for faster problem solving, allowing the decision-maker(s) to focus more on the interpretation of the results and the ability to use AHP for group decision-making. In Chapter 2, it explains the process of AHP application in 6 steps with a practical hypothetical example of purchasing a new car. The emphasis in this chapter is on acquiring knowledge and skills in using the AHP process with spreadsheets in Excel. Chapter 3 continues with the same example (with more criteria and alternatives) and the application of the AHP 6-step process in the



Creative Decision Foundations' free software, Super Decisions v2. Please visit its webpage for detailed information and the newest version, Super Decisions v3.2 (<http://www.superdecisions.com/>). Part II consists of 4 chapters. Chapter 4 describes how, in the general model with three levels, we can add a new level, i.e. sub-criteria to one or more of the chosen criteria. Chapter 5 is dedicated to the absolute measurement of AHP. More precisely, in cases when the number of alternatives is large or they are subject to change (add or delete), the relative measurement, which was considered until this chapter, is not the proper one. Therefore, rating models are created where the alternatives are compared with a standard and not with the other alternatives regarding each criterion. The use of rating models for the selection of the next top salesperson is elaborated in Cvetkoska and Iliev (2017), while the financial decisions of a young population in developing countries are presented in Kaftandzieva and Cvetkoska (2021). The next chapter considers the rating model in Super Decisions v2, which can be easily developed and solved. Chapter 7 introduces another type of analysis where AHP can be successfully implemented, and that is a benefit cost analysis, as well as benefit, opportunity, cost, and risk (BOCR) analysis (Saaty and Ozdemir, 2004). For each element, a different hierarchy is created, and the authors point out that the 4 hierarchies for the BOCR can be developed and solved in Super Decisions, but the calculations for the multiplicative ratio ($B \cdot O / C \cdot R$) should be performed outside the software. Part 3 consists of 3 chapters. Chapter 8 focuses on the use of AHP for group decision-making, where the opinions of several experts are required for complex problems or when the decision will have an impact on different stakeholders, and they should be included. The authors provide a thorough explanation of the process, using a real case example of the selection of a cloud service provider for the City of Pittsburgh (Mu and Stern 2014). Chapter 9 focuses on the AHP use in group negotiations and conflict resolution (Saaty, 2012; Saaty and Alexander, 2013), and explains how the hierarchies can be created for each party separately by deep discussion with the facilitator and obtaining a solution that is beneficial for each party. The last chapter gives three different AHP practical applications, i.e. to evaluate ePortfolio alternatives for a higher learning institution, to use the AHP model in public decisions (Mu, 2014), and to elicit tacit knowledge in the process of decision-making.

Mu and Pereyra-Rojas (2017, p. 103) state the following: "...working with AHP is rather similar to working with LEGO blocks. The number of different blocks is rather limited and relatively easy to grasp; however, the possibilities of what can be done with them are rather unlimited. Similarly, using a relative limited set of concepts: hierarchical modeling, pairwise comparison, consistency, synthesis, and sensitivity; it is possible to address a very broad number of decision-making problems and situations." Following their words, this book shows how to use and combine the AHP basic concepts in decision-making as demonstrated by more than 20,000 worldwide downloads of this book to date. Video demonstrations of many book examples are also available as supplementary material.

Good decisions necessitate the utilization of high-quality data and quantitative methodologies that are given to decision-makers with a recommendation. As a result, this book is a must-read for all students and managers in the private and public sectors, as it will help them make better and faster decisions using a proven and powerful MCDM approach.

Note - Another Springer book, titled "Practical Decision Making Using Super Decisions v3" with the same structure of current review but using the newest version of Super Decisions has also been published by the authors (Mu and Pereyra-Rojas 2018).

REFERENCES:

- [1] Brunnelli, M. (2015). Introduction to the Analytic Hierarchy Process. Springer.
- [2] Cvetkoska, V., and Iliev, F. (2017). How to Choose Your Next Top Salesperson: Multiple-Criteria Approach. *Business Systems Research*, 8(1), 92-112.
- [3] Kaftandzieva, T. and Cvetkoska, V. (2021). Financial Decision-Making among Young Adults: An AHP Approach, *International Journal of the Analytic Hierarchy Process*, 13(3), 458-482.
- [4] Mardani, A., Jusoh, A., Nor, K. M. D., Khalifah, Z., Zakwan, N., and Valipour, M. (2015). Multiple criteria decision-making techniques and their applications – a review of the literature from 2000 to 2014, *Economic Research-Ekonomska Istraživanja*, 28:1, 516-571, DOI: 10.1080/1331677X.2015.1075139.
- [5] Mu, E. (2014). An MCDM reflection of the FIFA 2014 world cup golden ball award. *The International Journal of the Analytic Hierarchy Process*, 6(2), 124-131.
- [6] Mu, E. and Pereyra-Rojas, M. (2017). *Practical Decision Making: An Introduction to the Analytic Hierarchy Process (AHP) Using Super Decisions v2*. Springer Nature.
- [7] Mu, E. and Pereyra-Rojas (2018). *Practical Decision Making Using Super Decisions v3: An Introduction to the Analytic Hierarchy Process*. Switzerland: Springer International Publishing AG.

- [8] Mu, E. and Stern, H. (2014). The City of Pittsburgh goes to the cloud: A case study of cloud strategic selection and deployment. *Journal of Information Technology Teaching Cases*, 4, 70-85.
- [9] Saaty, T. L. (2012). *Decision Making for Leaders: The Analytic Hierarchy Process for Decisions in a Complex World*. Third revised edition. Pittsburgh: RWS Publications.
- [10] Saaty, T. L. and Ozdemir, M. S. (2004). *The encyclicon: A dictionary of decisions with dependence and feedback based on the analytic network process*. Pittsburgh: RWS Publications.
- [11] Saaty, T. L., and Alexander, J. M. (2013). *Conflict Resolution: The Analytic Hierarchy Approach*. Pittsburgh: RWS Publications.

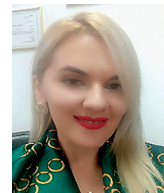


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