

Application Of Ahp Method For The Selection Of Srce

Strategic Decision Making provides an effective, formal methodology that provides help with decision making problems, especially strategic ones with high stakes involving human perceptions and judgements. Focusing on applying the AHP to decision-making problems, Strategic Decision Making covers problems in the realms of business, defence and governance. Using case studies drawn from years of experience, the book discusses decision making for real life problems and includes many worked examples and solutions to problems throughout. The reader will gain comprehensive exposure to the extent of assistance that a formal methodology, such as AHP, can provide to the decision maker in evolving decisions in complex and varied domains.

Applications and Theory of Analytic Hierarchy Process Decision Making for Strategic Decisions BoD – Books on Demand

This book examines relationships between pairwise comparisons matrices. It first provides an overview of the latest theories of pairwise comparisons in decision making, discussing the pairwise comparison matrix, a fundamental tool for further investigation, as a deterministic matrix with given elements. Subsequent chapters then investigate these matrices under uncertainty, as a matrix with vague elements (fuzzy and/or intuitionistic fuzzy ones), and also as random elements. The second part of the book describes the application of the theoretical results in the three most popular multicriteria decision-making methods: the Analytic Hierarchy Process (AHP), PROMETHEE and TOPSIS. This book appeals to scholars in areas such as decision theory, operations research, optimization theory, algebra, interval analysis and fuzzy sets.

Optimization and evaluation are essential to the operations of several sectors such as the healthcare sector and the agriculture industry. Improvement of optimizations and evaluation are imperative for industry success and ensures that better services are provided to global consumers across sectors. Interdisciplinary Perspectives on Operations Management and Service Evaluation is a critical scholarly publication that focuses on operations management across several sectors and assessment strategies for the improvement of these industries. Featuring a range of topics such as fuzzy logic, ecosystem services, and metaheuristics, this book is ideal for managers, service evaluators, marketers, academicians, business professionals, researchers, practitioners, and students.

This two volume set (CCIS 1058 and 1059) constitutes the refereed proceedings of the 5th International Conference of Pioneering Computer Scientists, Engineers and Educators, ICPCSEE 2019 held in Guilin, China, in September 2019. The 104 revised full papers presented in these two volumes were carefully reviewed and selected from 395 submissions. The papers cover a wide range of topics related to basic theory and techniques for data science including data mining; data base; net work; security; machine learning; bioinformatics; natural language processing; software engineering; graphic images; system; education; application.

The book is a collection of high-quality peer-reviewed research papers presented in the Second International Conference on Computational Intelligence in Data Mining (ICCIDM 2015) held at Bhubaneswar, Odisha, India during 5 – 6 December 2015. The two-volume Proceedings address the difficulties and challenges for the seamless integration of two core disciplines of computer science, i.e., computational intelligence and data mining. The book addresses different methods and techniques of integration for enhancing the overall goal of data mining. The book helps to disseminate the knowledge about some innovative, active research directions in the field of data mining, machine and computational intelligence, along with some current issues and applications of related topics.

This book examines the Analytical Hierarchy Process (AHP) method, its varied uses, as well as its limitations for solving real-world scenarios. While the simplicity of the method compels users to find shortcuts to a real-world problem, it also leads to obtaining wrong results that do not represent reality. By alerting practitioners about the core necessities of a new scenario, this book helps solve this problem, as well as contribute to the field of Multicriteria Decision Making Method (MDCM). The authors use a demonstrative, rather than a theoretical approach, and examine 30 subjects that displays the shortcomings and drawbacks of the AHP. Each one is examined in-depth, discussed, debated and reasoned, using examples, some of them numeric. The book highlights the rationality and common sense of the subjects, and in most cases, validates the criticism by showing through numerical examples, the impossibility of the AHP method to address, let alone solve real-world projects. At the conclusion of each subject, a table is built comparing the similarities and differences between the opinions of the authors and other experts, along with the respective pros and cons.

Management science is a discipline dedicated to the development of techniques that enable decision makers to cope with the increasing complexity of our world. The early burst of excitement which was spawned by the development and successful applications of linear programming to problems in both the public and private sectors has challenged researchers to develop even more sophisticated methods to deal with the complex nature of decision making. Sophistication, however, does not always translate into more complex mathematics. Professor Thomas L. Saaty was working for the U. S. Defense Department and for the U. S. Department of State in the late 1960s and early 1970s. In these positions, Professor Saaty was exposed to some of the most complex decisions facing the world: arms control, the Middle East problem, and the development of a transport system for a Third World country. While having made major contributions to numerous areas of mathematics and the theory of operations research, he soon realized that one did not need complex mathematics to come to grips with these decision problems, just the right mathematics! Thus, Professor Saaty set out to develop a mathematically-based technique for analyzing complex situations which was sophisticated in its simplicity. This technique became known as the Analytic Hierarchy Process (AHP) and has become very successful in helping decision makers to structure and analyze a wide range of problems.

This book presents current developments in smart city research and application regarding the management of manufacturing systems, Industry 4.0, transportation, and business management. It suggests approaches to incorporating smart city innovations into manufacturing systems, with an eye towards competitiveness in a global environment. The same pro-innovative approach is then applied to business and cooperation management. The authors also present smart city transportation solutions including vehicle data processing/reporting system, mobile application for fleet managers, bus drivers, bus passengers and special applications for smart city buses like passenger counting system, IP cameras, GPS system etc. The goal of the book is to establish channels of communication and disseminate knowledge among researchers and professionals working on smart city research and application. Features contributions on a variety of topics

related to smart cities from global researchers and professionals in a wide range of sectors; Presents topics relating to smart cities such as manufacturing, business, and transportation; Includes expanded selected papers from EAI International Conference on Management of Manufacturing Systems (MMS 2016), EAI Industry of Things and Future Technologies Conference – Mobility IoT 2016 and International Conference on Smart Electric Vehicles and Vehicular Ad-hoc NETWORKS (SEVNET).

This is the eBook version of the printed book. The Analytic Hierarchy Process (AHP) is an advanced technique that supports decision makers in structuring complex decisions, quantifying intangible factors, and evaluating choices in multiobjective decision situations. It is a comprehensive and rational decision-making framework that provides a powerful methodology for determining relative worth among a set of elements. AHP is especially suitable for complex decisions that involve the comparison of decision elements which are difficult to quantify. The AHP, and its more recent version the Analytic Network Process (ANP), were developed by Dr. Thomas Saaty and have been applied in a wide variety of decision situations in organizations worldwide. AHP is particularly applicable in managing software complexity, and in Quality Function Deployment (QFD), as presented in Chapter 11 of the book Design for Trustworthy Software. This short cut illustrates the application of AHP in prioritizing complex design issues. It also shows how AHP and its supporting software, Expert Choice (EC), can handle much higher levels of complexities accurately and expeditiously than the prioritization matrices introduced in Chapter 7 of Design for Trustworthy Software. In addition to solutions facilitated by EC, this short cut also illustrates two known approximations to AHP solutions using manual calculations. Manual calculations can be used to solve relatively less complex problems. They are presented in this short cut to illustrate the first principles and the steps involved in AHP. This short cut is a reproduction of Chapter 8 of the book Design for Trustworthy Software and introduces AHP with a simple example. It can be used either as a methodology in trustworthy software design process or as a standalone introductory presentation on AHP. This short cut should be of interest to software and quality professionals. In particular, it would be of value to the CMMI, Six Sigma, and DFSS communities worldwide, especially those who have acquired or plan to acquire Green Belt, Black Belt, Master Black Belt, or similar competencies in various quality management disciplines. It should also be a useful resource for students and academicians of various programs at senior undergraduate and graduate levels, and for those preparing for ASQ's Certified Software Quality Engineer (CSQE) examination. What This Short Cut Covers 3 Introduction 4 Prioritization, Complexity, and the Analytic Hierarchy Process 4 Multiobjective Decision-Making and AHP 5 Case Study 1 Solution Using Expert Choice 12 Approximations to AHP with Manual Calculations 22 Conclusion 33 Key Points 33 Additional Resources 34 Internet Exercises 34 Review Questions 34 Discussion Questions and Projects 35 Problems 36 Endnotes 45 What's in the Book Design for Trustworthy Software 47 About the Authors 52 The Design for Trustworthy Software Digital Short Cut Compilation 53

Researchers have been continually developing ways and means to improve quality in decision making. The success of a methodology is judged by its acceptability by the decision makers. In this context, it is beyond any argument that AHP has been massively successful. Readers of this volume will see, once again, that AHP has been applied in widely diverse areas. However, there are many more applications of AHP in other areas that are not reported here. We also don't claim that the set of applications of AHP in the reported areas is exhaustive; it is far from complete. In fact, it will not be possible to capture all the real-world applications of AHP even by publishing many volumes of this kind. We hope that the readers will find the present compilation useful.

The Analytic Hierarchy Process (AHP) has been one of the foremost mathematical methods for decision making with multiple criteria and has been widely studied in the operations research literature as well as applied to solve countless real-world problems. This book is meant to introduce and strengthen the readers' knowledge of the AHP, no matter how familiar they may be with the topic. This book provides a concise, yet self-contained, introduction to the AHP that uses a novel and more pedagogical approach. It begins with an introduction to the principles of the AHP, covering the critical points of the method, as well as some of its applications. Next, the book explores further aspects of the method, including the derivation of the priority vector, the estimation of inconsistency, and the use of AHP for group decisions. Each of these is introduced by relaxing initial assumptions. Furthermore, this booklet covers extensions of AHP, which are typically neglected in elementary expositions of the methods. Such extensions concern different numerical representations of preferences and the interval and fuzzy representations of preferences to account for uncertainty. During the whole exposition, an eye is kept on the most recent developments of the method.

Decision makers are often faced with several conflicting alternatives. How do they evaluate trade-offs when there are more than three criteria? To help people make optimal decisions, scholars in the discipline of multiple criteria decision making (MCDM) continue to develop new methods for structuring preferences and determining the correct relative weights for criteria. A compilation of modern decision-making techniques, Multiple Attribute Decision Making: Methods and Applications focuses on the fuzzy set approach to multiple attribute decision making (MADM). Drawing on their experience, the authors bring together current methods and real-life applications of MADM techniques for decision analysis. They also propose a novel hybrid MADM model that combines DEMATEL and analytic network process (ANP) with VIKOR procedures. The first part of the book focuses on the theory of each method and includes examples that can be calculated without a computer, providing a complete understanding of the procedures. Methods include the analytic hierarchy process (AHP), ANP, simple additive weighting method, ELECTRE, PROMETHEE, the gray relational model, fuzzy integral technique, rough sets, and the structural model. Integrating theory and practice, the second part of the book illustrates how methods can be used to solve real-world MADM problems. Applications covered in the book include: AHP to select planning and design services for a construction project TOPSIS and VIKOR to evaluate the best alternative-fuel vehicles for urban areas ELECTRE to solve network design problems in urban transportation planning PROMETEE to set priorities for the development of new energy systems, from solar thermal to hydrogen energy Fuzzy integrals to evaluate enterprise intranet web sites Rough sets to make decisions in insurance marketing Helping readers understand how to apply MADM techniques to their decision making, this book is suitable for undergraduate and graduate students as well as practitioners.

This book is about how to make decisions using the Analytic Hierarchy Process. The basics of the theory are described in a clear, non-technical manner with many examples. It is suitable for business leaders and also is probably the best book for introducing the AHP to students at the college and graduate level. In this fifth printing of the book the reader will find a new appendix containing real-life applications that validate the use of the fundamental scale of the AHP.

Globalization is a multi-dimensional concept reflecting the increased economic, social, cultural, and political integration of countries. There has been no pinpointed consensus on the history of globalization;

however, the globalization process has gained significant speed as of the 1980s in combination with liberalization. Many countries have removed or loosened barriers over the international flows of goods, services, and production factors. In this context, both liberalization and globalization have led to considerable institutional, economic, social, cultural, and political changes in the world. The liberalization and globalization processes have affected economic units, institutions, cultures, social lives, and national and international politics. The Handbook of Research on Institutional, Economic, and Social Impacts of Globalization and Liberalization provides a comprehensive evaluation of the institutional, economic, and social impacts of globalization and liberalization processes across the world. While highlighting topics like economics, finance, business, and public administration, this book is ideally intended for government officials, policymakers, practitioners, stakeholders, researchers, and academicians interested in the international impacts of globalization and liberalization across a variety of different domains.

Decision-making is a process of choosing from possible courses of action in order to attain goals and objectives. Nobel laureate Herbert Simon wrote that the whole process of managerial decision-making is synonymous with the practice of management. Decision-making is at the core of all managerial functions. Planning, for example, involves the following decisions: What should be done? When? How? Where? By whom? Other managerial functions, such as organizing, implementing, and controlling, rely heavily on decision-making. Decision by Objectives is an invaluable book about the art and science of decision-making. It presents a very practical approach to decision-making that has a sound theoretical foundation, known as the analytic hierarchy process. Intended for both the student and the professional, the book includes approaches to prioritizing, evaluating alternative courses of action, forecasting, and allocating resources. By focusing on objectives rather than alternatives alone, it shows the reader how to synthesize information from multiple sources, analyses, and perspectives. The methods presented have been gaining popularity throughout the world.

This book presents recent research in intelligent and fuzzy techniques. Emerging conditions such as pandemic, wars, natural disasters and various high technologies force people for significant changes in business and social life. The adoption of digital technologies to transform services or businesses, through replacing non-digital or manual processes with digital processes or replacing older digital technology with newer digital technologies through intelligent systems is the main scope of this book. It focuses on revealing the reflection of digital transformation in our business and social life under emerging conditions through intelligent and fuzzy systems. The latest intelligent and fuzzy methods and techniques on digital transformation are introduced by theory and applications. The intended readers are intelligent and fuzzy systems researchers, lecturers, M.Sc. and Ph.D. students studying digital transformation. Usage of ordinary fuzzy sets and their extensions, heuristics and metaheuristics from optimization to machine learning, from quality management to risk management makes the book an excellent source for researchers.

This book constitutes the refereed proceedings of the 12th IFIP WG 5.5 Working Conference on Virtual Enterprises, PRO-VE 2011, held in Sao Paulo, Brazil, in October 2011. The 61 revised papers presented were carefully selected from numerous submissions. They provide a comprehensive overview of recent advances in various collaborative network (CN) domains and their applications with a particular focus on adaptation of the networks and their value creation, specifically emphasizing topics related to evolution from social networking to collaborative networks; social capital; value chains; co-creation of complex products; performance management; behavioral aspects in collaborative networks; collaborative networks planning and modeling; benefit analysis and sustainability issues, as well as including important technical and scientific challenges in applying CNs to areas such as advanced logistics networks, business process modeling, service orientation, and other emerging application domains such as ageing, tourism, crisis, and emergency scenarios.

Managing Organizations for Sustainable Development in Emerging Countries focuses on the main challenges and opportunities of managing firms and emerging economies in the light of sustainable development. One of the key questions of sustainable development is how organizations from developing countries are achieving their economic goals while considering, simultaneously, environmental issues like conservation of natural resources, eco-efficiency, biodiversity conservation, and climate-change mitigation. These questions are relevant for government, industry, and urban sustainability. However, in the modern literature that discusses organizational management for sustainable development, few studies focus on the reality of organizations from emerging countries. Moreover, changing environmental legislation in emerging countries (such as China and Brazil) will affect organizational managers. In this context, this book may contribute to organizational management in the search for more sustainable organizations, as well as deal with the challenges of managing organizations in the context of increased social problems, degradation of natural resources, loss of biodiversity, and climate change. This book was published as a special issue of the International Journal of Sustainable Development & World Ecology.

This work examines all the fuzzy multicriteria methods recently developed, such as fuzzy AHP, fuzzy TOPSIS, interactive fuzzy multiobjective stochastic linear programming, fuzzy multiobjective dynamic programming, grey fuzzy multiobjective optimization, fuzzy multiobjective geometric programming, and more. Each of the 22 chapters includes practical applications along with new developments/results. This book may be used as a textbook in graduate operations research, industrial engineering, and economics courses. It will also be an excellent resource, providing new suggestions and directions for further research, for computer programmers, mathematicians, and scientists in a variety of disciplines where multicriteria decision making is needed.

In two volumes, this new edition presents the state of the art in Multiple Criteria Decision Analysis (MCDA). Reflecting the explosive growth in the field seen during the last several years, the editors not only present surveys of the foundations of MCDA, but look as well at many new areas and new applications. Individual chapter authors are among the most prestigious names in MCDA research, and combined their chapters bring the field completely up to date. Part I of the book considers the history and current state of MCDA, with surveys that cover the early history of MCDA and an overview that discusses the "pre-theoretical" assumptions of MCDA. Part II then presents the foundations of MCDA, with individual chapters that provide a very exhaustive review of preference modeling, along with a chapter devoted to the axiomatic basis of the different models that multiple criteria preferences. Part III looks at outranking methods, with three chapters that consider the ELECTRE methods, PROMETHEE methods, and a look at the rich literature of other outranking methods. Part IV, on Multiattribute Utility and Value Theories (MAUT), presents chapters on the fundamentals of this approach, the very well known UTA methods, the Analytic Hierarchy Process (AHP) and its more recent extension, the Analytic Network Process (ANP), as well as a chapter on MACBETH (Measuring Attractiveness by a Categorical Based Evaluation Technique). Part V looks at Non-Classical MCDA Approaches, with chapters on risk and uncertainty in MCDA, the decision rule approach to MCDA, the fuzzy integral approach, the verbal decision methods, and a tentative assessment of the role of fuzzy sets in decision analysis. Part VI, on Multiobjective Optimization, contains chapters on recent developments of vector and set optimization, the state of the art in continuous multiobjective programming, multiobjective combinatorial optimization, fuzzy multicriteria optimization, a review of the field of goal programming, interactive methods for solving multiobjective optimization problems, and relationships between MCDA and evolutionary multiobjective optimization (EMO). Part VII, on Applications, selects some of the most significant areas, including contributions of MCDA in finance, energy planning problems, telecommunication network planning and design, sustainable development, and portfolio analysis. Finally, Part VIII, on MCDM software, presents well known MCDA software packages.

The Analytic Hierarchy Process (AHP) is a prominent and powerful tool for making decisions in situations involving multiple objectives. Models, Methods, Concepts and Applications of the Analytic Hierarchy Process, 2nd Edition applies the AHP in order to solve problems focused on the following three themes: economics, the social sciences, and the linking of measurement

with human values. For economists, the AHP offers a substantially different approach to dealing with economic problems through ratio scales. Psychologists and political scientists can use the methodology to quantify and derive measurements for intangibles. Meanwhile researchers in the physical and engineering sciences can apply the AHP methods to help resolve the conflicts between hard measurement data and human values. Throughout the book, each of these topics is explored utilizing real life models and examples, relevant to problems in today's society. This new edition has been updated and includes five new chapters that includes discussions of the following: - The eigenvector and why it is necessary - A summary of ongoing research in the Middle East that brings together Israeli and Palestinian scholars to develop concessions from both parties - A look at the Medicare Crisis and how AHP can be used to understand the problems and help develop ideas to solve them.

This book offers a simple introduction to the fundamentals and applications of the Analytic Hierarchy Process (AHP) without a pre-requisite for a sophisticated mathematical background. It provides a quick and intuitive understanding of the methodology using spreadsheet examples and explains in a step-by-step fashion how to use Super Decisions, a freely available software developed by the Creative Decisions Foundations. The book is intended to be a resource for decision makers with little or no exposure to the field of Operations Research (OR); however, the book can be used as a very gentle introduction to the AHP methodology and/or as an AHP hands-on supplement for standard OR textbooks. AHP is an intuitive and mathematically simple methodology in the field of multi-criteria decision making. Because of this, most AHP books assume the reader has basic OR mathematical background. However, AHP simplicity suggests that decision makers from all disciplines can take advantage of the methodology without struggling with the mathematics behind it. To fulfill this need, this book delivers a quick and practical understanding of the method that can be useful for corporate executives.

This book comprises select peer-reviewed papers from the International Conference on Emerging Trends in Electromechanical Technologies & Management (TEMT) 2019. The focus is on current research in interdisciplinary areas of mechanical, electrical, electronics and information technologies, and their management from design to market. The book covers a wide range of topics such as computer integrated manufacturing, additive manufacturing, materials science and engineering, simulation and modelling, finite element analysis, operations and supply chain management, decision sciences, business analytics, project management, and sustainable freight transportation. The book will be of interest to researchers and practitioners of various disciplines, in particular mechanical and industrial engineering.

Supplier selection is one of the most critical activities of purchasing department in supply chain management. It is also a complex problem involving qualitative and quantitative factors in decision making process. In this research paper, an AHP-based supplier selection model is formulated and then applied to a real case study for a multinational information technology company. The use of the model indicates that it can be applied to improve and assist decision making in choosing the optimal suppliers. Additionally the AHP method provides decision makers the weightage for logical consistency. The work represents the systematic identification of the important criteria for supplier selection process. The results also exhibit the application of development of a multi-criteria decision model for evaluation and selection of suppliers with the AHP model, which by scoring the performance of suppliers is able to select a vendor efficiently..

This book describes a wide range real-case applications of Multi-Criteria Decision Making (MCDM) in maritime related subjects including shipping, port, maritime logistics, cruise ports, waterfront developments, and shipping finance, etc. In such areas, researchers, students and industrialists, in general, felt struggling to find a step-by-step guide on how to apply MCDM to formulate effective solutions to solving real problems in practice. This book focuses on the in-depth analysis and applications of the most well-known MDCM methodologies in the aforementioned areas. It brings together an eclectic collection of twelve chapters which seek to respond to these challenges. The book begins with an introduction and is followed by an overview of major MCDM techniques. The next chapter examines the theory of analytic hierarchy process (AHP) in detail and investigates a fuzzy AHP (FAHP) approach and its capability and rationale in dealing with decision problems of ambiguous information. Chapter 4 proposes a generic methodology to identify the key factors influencing green shipping and to establish an evaluation system for the assessment of shipping greenness. In Chapter 5, the authors describe a new function of fuzzy Evidential Reasoning (ER) to improve the vessel selection process in which multiple criteria with insufficient and ambiguous information are evaluated and synthesized. Chapter 6 presents a novel methodology by using an Artificial Potential Field (APF) model and the ER approach to estimate the collision probabilities of monitoring targets for coastal radar surveillance. Chapter 7 develops the inland port performance assessment model (IPPAM) using a hybrid of AHP, ER and a utility function. The next chapter showcases a challenging approach to address the risk and uncertainty in LNG transfer operations, by utilizing a Stochastic Utility Additives (UTA) method with the help of the philosophy of aggregation–disaggregation coupled with a robustness control procedure. Chapter 9 uses Entropy and Grey Relation Analysis (GRA) to analyze the relative weights of financial ratios through the case studies of the four major shipping companies in Korea and Taiwan: Evergreen, Yang Ming, Hanjin and Hyundai Merchant Marine. Chapter 10 systemically applies modern heuristics to solving MCDM problems in the fields of operation optimisation in container terminals. Arguing that bunkering port selection is typically a multi-criteria group decision problem, and in many practical situations, decision makers cannot form proper judgments using incomplete and uncertain information in an environment with exact and crisp values, in Chapter 11, the authors propose a hybrid Fuzzy-Delphi-TOPSIS based methodology with a sensitivity analysis. Finally, Chapter 12 deals with a new conceptual port performance indicators (PPIs) interdependency model using a hybrid approach of a fuzzy logic based evidential reasoning (FER) and a decision making trial and evaluation laboratory (DEMATEL).

Risk management is an interdisciplinary discipline that involves several aspects. It is absolutely necessary to make sure we manage risks in order to minimize their threats and maximize their potential. This book tries to investigate the complexity that characterizes risk management. It contains original research and application chapters from different perspectives and covers different areas such as human aspects, emergency management, cognitive factors, software engineering, and marketing. The idea of the book is to expand the reader's consciousness to deal with problems regarding risk management.

In this paper we extend fuzzy analytic hierarchy process into neutrosophic cubic environment. The neutrosophic cubic analytic hierarchy process can be used to manage more complex problems when the decision makers has a number of uncertainty, assigning preferences values to the considered object. We also de ne the concept of triangular neutrosophic cubic numbers

and their operations laws. The advantages of the proposed methodology and the application of neutrosophic cubic analytic hierarchy process in decision making are shown by testing the numerical example in practical life.

This book is the first in the literature to present the state of the art and some interesting and relevant applications of the Fuzzy Analytic Hierarchy Process (FAHP). The AHP is a conceptually and mathematically simple, easily implementable, yet extremely powerful tool for group decision making and is used around the world in a wide variety of decision situations, in fields such as government, business, industry, healthcare, and education. The aim of this book is to study various fuzzy methods for dealing with the imprecise and ambiguous data in AHP. Features: First book available on FAHP. Showcases state-of-the-art developments. Contains several novel real-life applications. Provides useful insights to both academics and practitioners in making group decisions under uncertainty This book provides the necessary background to work with existing fuzzy AHP models. Once the material in this book has been mastered, the reader will be able to apply fuzzy AHP models to his or her problems for making decisions with imprecise data.

This book presents the proceedings of the 10th Conference on Theory and Applications of Soft Computing, Computing with Words and Perceptions, ICSCCW 2019, held in Prague, Czech Republic, on August 27–28, 2019. It includes contributions from diverse areas of soft computing and computing with words, such as uncertain computation, decision-making under imperfect information, neuro-fuzzy approaches, deep learning, natural language processing, and others. The topics of the papers include theory and applications of soft computing, information granulation, computing with words, computing with perceptions, image processing with soft computing, probabilistic reasoning, intelligent control, machine learning, fuzzy logic in data analytics and data mining, evolutionary computing, chaotic systems, soft computing in business, economics and finance, fuzzy logic and soft computing in earth sciences, fuzzy logic and soft computing in engineering, fuzzy logic and soft computing in material sciences, soft computing in medicine, biomedical engineering, and pharmaceutical sciences. Showcasing new ideas in the field of theories of soft computing and computing with words and their applications in economics, business, industry, education, medicine, earth sciences, and other fields, it promotes the development and implementation of these paradigms in various real-world contexts. This book is a useful guide for academics, practitioners and graduates.

Earthquakes are the leading natural disasters that seriously affect human life. Furthermore, earthquakes are natural disasters that have the ability to trigger a second disaster in addition to the damages they cause. From this point of view, post-earthquake fires are defined as the one of the most dangerous secondary disasters after an earthquake and often cause even more serious dangers. For this reason, government officials and relevant decision-makers should effectively determine post-earthquake fire risks and take necessary precautions. In this study, we consider the problem of determining the fire risk after an earthquake as a multi-criteria decision problem and present a two-level framework for risk assessment. The main and sub-criteria are determined by a detailed literature review and Modified Delphi method is employed to gain and consolidate expert opinions.

The purpose of this book is to provide an introduction to the theory and applications in the field of decision making, especially focused on Analytic Hierarchy Process, a structured technique for organizing and analyzing complex decisions, based on mathematics and psychology. It was developed by Prof. Thomas L. Saaty in the 1970s and has been extensively studied and refined since then. The idea of the book is to expand the reader's consciousness to deal with problems regarding the decision making. This book presents some application examples of Analytic Hierarchy. It contains original research and application chapters from different perspectives, and covers different areas such as supply chain, environmental engineering, safety, and social issues. This book is intended to be a useful resource for anyone who deals with decision making problems.

Advances in Renewable Energies Offshore is a collection of the papers presented at the 3rd International Conference on Renewable Energies Offshore (RENEW 2018) held in Lisbon, Portugal, on 8-10 October 2018. The 104 contributions were written by a diverse international group of authors and have been reviewed by an International Scientific Committee. The book is organized in the following main subject areas: - Modelling tidal currents - Modelling waves - Tidal energy devices (design, applications and experiments) - Tidal energy arrays - Wave energy devices (point absorber, multibody, applications, control, experiments, CFD, coastal OWC, OWC and turbines) - Wave energy arrays - Wind energy devices - Wind energy arrays - Maintenance and reliability - Combined platforms - Moorings, and - Flexible materials Advances in Renewable Energies Offshore collects recent developments in these fields, and will be of interest to academics and professionals involved in the above mentioned areas.

Developments in Healthcare Information Systems and Technologies: Models and Methods presents the latest research in healthcare information systems design, development, and deployment, benefiting researchers, practitioners, and students. Contributions investigate topics such as clinical education, electronic medical records, clinical decision support systems, and IT adoption in healthcare.

One of the best-known methods of multi-criteria decision-making is the Analytic Hierarchy Process (AHP). This method provides a convenient and versatile framework for modeling multi-criteria decision problems, evaluating alternatives, and deriving final priorities. Rather than imposing a "correct" decision, AHP allows the user to create a ranking of alternatives, then choose the one which is the best (or among the best). At the core of AHP is a pairwise comparisons (PC) method. This is an old technique known in various forms since at least the Middle Ages. AHP uses and develops the PC method. The aim of Understanding the Analytic Hierarchy Process is to provide the reader with a critical guide to AHP. In this book, the AHP method is considered primarily as a mathematical technique supporting the decision-making process. Key Features Collects the ideas underpinning the AHP method and discusses them together with many improvements and extensions present in the literature. As a result, the reader will receive a much more complete picture of the method. Aimed at theorists and advanced practitioners from a wide range of scientific fields, including the social, management, and technical sciences. Highlights the intuitive assumptions underlying the mathematical methods that make up AHP and the pairwise comparisons method. Provides software code for readers who wish to practice AHP analysis using the Wolfram Language.

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