This book describes concepts, methods and practical techniques for managing projects to develop constructed facilities in the fields of oil & gas, power, infrastructure, architecture and the commercial building industries. It is addressed to a broad range of professionals willing to improve their management skills and designed to help newcomers to the engineering and construction industry understand how to apply project management to field practice. Also, it makes project management disciplines accessible to experts in technical areas of engineering and construction. In education, this text is suitable for undergraduate and graduate classes in architecture, engineering and construction management, as well as for specialist and professional courses in project management.

Quantitative Methods for Second Language Research introduces approaches to and techniques for quantitative data analysis in second language research, with a primary focus on second language learning and assessment research. It takes a conceptual, problem-solving approach by emphasizing the understanding of statistical theory and its application to research problems while paying less attention to the mathematical side of statistical analysis. The text discusses a range of common statistical analysis techniques, presented and illustrated through applications of the IBM Statistical Package for Social Sciences (SPSS) program. These include tools for descriptive analysis (e.g., means and percentages) as well as inferential analysis (e.g., correlational analysis, t-tests, and analysis of variance [ANOVA]). The text provides conceptual explanations of quantitative methods through the use of examples, cases, and published studies in the field. In addition, a companion website to the book hosts slides, review exercises, and answer keys for each chapter as well as SPSS files. Practical and lucid, this book is the ideal resource for data analysis for graduate students and researchers in applied linguistics.
of quantitative data analysis in the field of language assessment. Each chapter provides an accessible explanation of the selected technique, a review of language assessment studies that have used the technique, and finally, an example of an authentic study that uses the technique. Readers also get a taste of how to apply each technique through the help of supplementary online resources that include sample data sets and guided instructions. Language assessment students, test designers, and researchers should find this a unique reference as it consolidates theory and application of quantitative data analysis in language assessment.

Providing new knowledge on risk analysis and simulation for megaprojects, this book is essential reading for both academics and practitioners. Its focus is on technical descriptions of a newly developed dynamic systems approach to megaproject risk analysis and simulation.

Bringing together the techniques required to understand, interpret and quantify the processes involved when exploring structures and relationships in questionnaire data, Quantitative Analysis of Questionnaires provides the knowledge and capability for a greater understanding of choice decisions. The ideal companion for non-mathematical students with no prior knowledge of quantitative methods, it highlights how to uncover and explore what lies within data that cannot be achieved through descriptive statistics. This book introduces significance testing, contingency tables, correlations, factor analysis (exploratory and confirmatory), regression (linear and logistic), discrete choice theory and item response theory. Using simple and clear methodology, and rich examples from a range of settings, this book: provides hands-on analysis with data sets from both SPSS and Stata packages; explores how to articulate the calculations and theory around statistical techniques; offers workable examples in each chapter with concepts, applications and proofs to help produce a higher quality of research outputs; discusses the use of formulas in the appendix for those who wish to explore a greater mathematical understanding of the concepts. Quantitative Analysis of Questionnaires is the ideal introductory textbook for any student looking to begin and or improve statistical learning as well as interpretation.

This new edition of a valued guide for construction students will: instil rigour into your problem solving and the production of reports and publications is one of the few books to provide guidance on research formulation, methodologies, and methods specifically for construction students has been extended in scope to cover many areas of debate, e.g. research ethics, and quantitative & qualitative research

Quantitative Methods in Transportation provides the most useful, simple, and advanced quantitative techniques for solving real-life transportation engineering problems. It aims to help transportation engineers and analysts to predict travel and freight demand, plan new transportation networks, and develop various traffic control strategies that are safer, more cost effective, and greener. Transportation networks can be exceptionally large, and this makes many transportation problems combinatorial, and the challenges are compounded by the stochastic and independent nature of trip-planners decision making. Methods outlined in this book range from linear programming, multi-attribute decision making, data envelopment analysis, probability theory, and simulation to computer techniques such as genetic algorithms, simulated annealing, tabu search, ant colony optimization, and bee colony optimization. The book is supported with problems and has a solutions manual to aid course instructors.

This is a comprehensive book on infrastructure development and construction management. It is written keeping in mind the curricula of construction management programmes in India and abroad. It covers infrastructure development, the construction industry in India, financial analysis of the real estate industry in India, economic analysis of projects, tendering and bidding, contracts and contract management, FIDIC conditions of contract, construction disputes and claims, arbitration, conciliation and dispute resolution, international construction project exports and identifying, analysing and managing construction project risk. Thus, this book covers most of the construction management activities that are carried out at different stages of a construction
project. This is an essential book for students of construction management, construction professionals, academicians and researchers.

This book is the first of its kind focusing on Application of Operations Research Techniques (Mathematics) in Project Management. It will be of immense help for Project Management Professionals in any industry verticals including Info technology program managers, engineering and construction managers and various operations’ managers. This book includes real industry examples and methods on how to use Operations Research (OR) techniques to help project management decision making. It will be a guide in the implementation of OR in project management. It includes 'Algorithms for various OR techniques'. It also includes Code in C++ for important OR models. The book deals with project management numerical illustrations on the use of various copyrighted software applications like Microsoft Math, SAP, SPSS, Matlab (Mathworks Inc.), Microsoft Project, Primavera, OpenPlan, C++. Most importantly, it provides an insight into building of interfaces between Enterprise Applications/business data warehouse to analytical applications like Matlab. Another important topic in this book is Metrics for Project Management and Progress Analysis (Earned Value Analysis) Methods. This is invaluable to monitor projects also serving as inputs for your project management balanced score cards and strategic program management and cost control. Besides various Statistical Methods and Operations Research Techniques, the book has a compilation of various Project Management Topics viz. Software Engineering Institute's Estimation Methods, various Claims Formulae with examples, Project Managerial Economics and Project Accounting & Controlling Methods. About the Author Retty Velayoudam holds a Bachelor's Degree in Engineering and a Master's Degree in Management. He was a PMI(c) (USA) Certified (2000-2003) Project Management Professional. He is a SAP (Germany) Certified Project System Solution Consultant. He is a Sr. SAP PS Consultant working in USA with 13 years of SAP PS (Project System) Consulting Experience. He has rich experience in Project Management Concepts, practices and in a wide range of Software Tools used for managing large multi-million complex projects in the Oil and Gas, Hi-Tech, IT industry, Engineering, Services, Manufacturing, US Public Sector, etc. He has experience in Enterprise level Project Management Information Systems.

This book provides a bridge between the introductory research methods books and the discipline-specific, higher level texts. Its unique feature is the coverage of the detailed process of research rather than the findings of research projects. Chapter authors have been carefully selected by their expertise, discipline and location to give an eclectic range of perspectives. Particular care has been taken to balance positivist with interpretivist approaches throughout. The authors focus is on the practicalities of the research philosophies, strategies and techniques by using their own research and by evaluating the work of others. Advanced Research Methods in the Built Environment addresses common topics raised by postgraduate level researchers rather than dealing with all aspects of the research process. Issues covered range from the practicalities of producing a journal article to the role of theory in research. The material brought together here provides a valuable resource for the training and development of doctoral and young researchers and will contribute to a new sense of shared methodological understanding across built environment research.

Forest management has evolved from a mercantilist view to a multi-functional one that integrates economic, social, and ecological aspects. However, the issue of sustainability is not yet resolved. Quantitative Techniques in Participatory Forest Management brings together global research in three areas of application: inventory of the forest variables that determine the main environmental indices, description and design of new environmental indices, and the application of sustainability indices for regional implementations. All these quantitative techniques create the basis for the development of scientific methodologies of participatory sustainable forest management.

The practice of institutional bond portfolio management has changed markedly since the late 1980s in response to new financial instruments, investment methodologies, and improved analytics. Investors are looking for a more disciplined, quantitative approach to asset management. Here, five top authorities from a leading Wall Street firm provide practical solutions and feasible methodologies based on investor inquiries. While taking a quantitative approach, they avoid complex mathematical derivations, making the book accessible to a wide audience, including portfolio managers, plan sponsors, research
analysts, risk managers, academics, students, and anyone interested in bond portfolio management. The book covers a range of subjects of concern to fixed-income portfolio managers--investment style, benchmark replication and customization, managing credit and mortgage portfolios, managing central bank reserves, risk optimization, and performance attribution. The first part contains empirical studies of security selection versus asset allocation, index replication with derivatives and bonds, optimal portfolio diversification, and long-horizon performance of assets. The second part covers portfolio management tools for risk budgeting, bottom-up risk modeling, performance attribution, innovative measures of risk sensitivities, and hedging risk exposures. A first-of-its-kind publication from a team of practitioners at the front lines of financial thinking, this book presents a winning combination of mathematical models, intuitive examples, and clear language.

Quantitative Methods for Business: The A-Z of QM will enable readers to: * Appreciate the significance of quantitative methods for businesses and the study of business * Understand and apply a wide range of quantitative techniques * Select appropriate quantitative techniques for data analysis, problem solving and decision making * Interpret and communicate the results of quantitative analysis

The book uses a systems-based approach to show how innovation is pervasive in all facets of endeavors, including business, industrial, government, the military, and even academia. It presents chapters that provide techniques and methodologies for achieving the transfer of science and technology assets for innovation applications. By introducing Innovation, the book and offers different viewpoints, both qualitative and quantitative. It includes the role that systems can play and discusses approaches along technical and process issues. There is a showcase of innovation applications, and coverage on how to manage innovation individually as well as within a team and it also includes how to develop, manage, and sustain innovation in various organizations. Open-ended questions and exercises are included at the end of chapters with no need for a solutions manual. Written for the advance-level textbook market as well as for the professional reader, it targets those within the engineering, business, and management fields.

This peer-reviewed proceedings contains 156 papers presented at the 2010 Construction Research Congress from May 8 to 10 in Alberta, Canada. Fourteen countries were represented at this meeting and these papers cover over 15 general state-of-knowledge areas in construction engineering and management. The goal of Construction Research Congress 2010: Innovation for Reshaping Construction Practice is to address and analyze revolutionary research findings, technological advances, emergent trends, and functional characteristics that are shaping the future of the industry. This proceedings will be invaluable to construction engineers and researchers, owners, consultants, contractors, and others involved in the architecture-engineering-construction industry.

An accessible introduction to the essential quantitative methods for making valuable business decisions Quantitative methods-research techniques used to analyze quantitative data-enable professionals to organize and understand numbers and, in turn, to make good decisions. Quantitative Methods: An Introduction for Business Management presents the application of quantitative mathematical modeling to decision making in a business management context and emphasizes not only the role of data in drawing conclusions, but also the pitfalls of undiscerning reliance of software packages that implement standard statistical procedures. With hands-on applications and explanations that are accessible to readers at various levels, the book successfully outlines the necessary tools to make smart and successful business decisions. Progressing from beginner to more advanced material at an easy-to-follow pace, the author utilizes motivating examples throughout to aid readers interested in decision making and also provides critical remarks, intuitive traps, and counterexamples when appropriate. The book begins with a discussion of motivations and foundations related to the topic, with introductory presentations of concepts from calculus to linear algebra. Next, the core ideas of quantitative methods are presented in chapters that explore introductory topics in probability, descriptive and inferential statistics, linear regression, and a discussion of time series that includes both classical topics and more challenging models. The author also discusses linear programming models and decision making under risk as well as less standard topics in the field such as game
theory and Bayesian statistics. Finally, the book concludes with a focus on selected tools from multivariate statistics, including advanced regression models and data reduction methods such as principal component analysis, factor analysis, and cluster analysis. The book promotes the importance of an analytical approach, particularly when dealing with a complex system where multiple individuals are involved and have conflicting incentives. A related website features Microsoft Excel® workbooks and MATLAB® scripts to illustrate concepts as well as additional exercises with solutions. Quantitative Methods is an excellent book for courses on the topic at the graduate level. The book also serves as an authoritative reference and self-study guide for financial and business professionals, as well as readers looking to reinforce their analytical skills.

This book provides a step-by-step guidance on how to implement analytical methods in project risk management. The text focuses on engineering design and construction projects and as such is suitable for graduate students in engineering, construction, or project management, as well as practitioners aiming to develop, improve, and/or simplify corporate project management processes. The book places emphasis on building data-driven models for additive-incremental risks, where data can be collected on project sites, assembled from queries of corporate databases, and/or generated using procedures for eliciting experts' judgments. While the presented models are mathematically inspired, they are nothing beyond what an engineering graduate is expected to know: some algebra, a little calculus, a little statistics, and, especially, undergraduate-level understanding of the probability theory. The book is organized in three parts and fourteen chapters. In Part I the authors provide the general introduction to risk and uncertainty analysis applied to engineering construction projects. The basic formulations and the methods for risk assessment used during project planning phase are discussed in Part II, while in Part III the authors present the methods for monitoring and (re)assessment of risks during project execution.

This book focuses on the use of quantitative methods for both business and management, helping readers understand the most relevant quantitative methods for managerial decision-making. Pursuing a highly practical approach, the book reduces the theoretical information to a minimum, so as to give full prominence to the analysis of real business problems. Each chapter includes a brief theoretical explanation, followed by a real-life managerial case that needs to be solved, which is accompanied by a corresponding Microsoft Excel® dataset. The practical cases and exercises are solved using Excel, and for each problem, the authors provide an Excel file with the complete solution and corresponding calculations, which can be downloaded easily from the book’s website. Further, in an appendix, readers can find solutions to the same problems, but using the R statistical language. The book represents a valuable reference guide for postgraduate, MBA and executive education students, as it offers a hands-on, practical approach to learning quantitative methods in a managerial context. It will also be of interest to managers looking for a practical and straightforward way to learn about quantitative methods and improve their decision-making processes.

This is a text book as well as a reference book for decision making in construction. The book is written to serve undergraduates of construction-related programmes and postgraduate students undertaking construction management bridging courses. It contains mainly quantitative techniques used to assist, decision making. Plenty of real life examples are used to illustrate the theories, arguments and calculations.

Built environment students are not always familiar with the range of different research approaches they could be using for their projects. Whether you are undertaking a postgraduate doctoral programme or facing an undergraduate or masters dissertation, this book provides general advice, as well as 13 detailed case studies from 16 universities in 7 countries, to help you get to grips with quantitative and qualitative methods, mixed methods of data collection, action research, and more.

Demands on the construction industry are changing, and it is now virtually essential for environmental management to be considered at all stages of a
project. Many construction managers are finding a quantitative approach useful, and this book outlines four quantitative methods which can be applied at different construction stages, and which fit within a comprehensive framework of dynamic Environmental Impact Assessment (EIA). These include: a method to quantitatively evaluate and reduce pollution and hazards levels; a method to evaluate the environmental-consciousness of proposed construction plans; a method to reduce on-site construction wastes through an incentive reward programme; and a method to promote C and D waste exchange in the local construction industry. With an experimental case study of the application of these methods, this book delivers a comprehensive review of environmental management issues in construction. With regulatory requirements potentially favouring the quantitative approach, this timely guide ensures that contractors will be able to keep pace with environmental management standards.

The Reviewer’s Guide is designed for reviewers of research manuscripts and proposals in the social and behavioral sciences, and beyond. Its uniquely structured chapters address traditional and emerging quantitative methods of data analysis.

While the construction process still requires traditional skills, the dynamic nature of construction demands of its managers improved understanding of modern business, production and contractual practices. This well established, core undergraduate textbook reflects current best practice in the management of construction projects, with particular emphasis given to supply chains and networks, value and risk management, BIM, ICT, project arrangements, corporate social responsibility, training, health and welfare and environmental sustainability. The overall themes for the Eighth Edition Modern Construction Management are: Drivers for efficiency: lean construction underpinning production management and off-site production methods. Sustainability: reflecting the transition to a low carbon economy. Corporate Social Responsibility: embracing health & safety and employment issues. Modern contractual systems driving effective procurement Building Information Modelling directed towards the improvement of collaboration in construction management systems

The significantly updated third edition of this short, practical book prepares students to write a questionnaire, generate a sample, conduct their own survey research, analyse data, and write up the results, while learning to read and interpret excerpts from published research. It combines statistics and survey research methods in a single book.

In the first book ever published on Indigenous quantitative methodologies, Maggie Walter and Chris Andersen open up a major new approach to research across the disciplines and applied fields. While qualitative methods have been rigorously critiqued and reformulated, the population statistics relied on by virtually all research on Indigenous peoples continue to be taken for granted as straightforward, transparent numbers. This book dismantles that persistent positivism with a forceful critique, then fills the void with a new paradigm for Indigenous quantitative methods, using concrete examples of research projects from First World Indigenous peoples in the United States, Australia, and Canada. Concise and accessible, it is an ideal supplementary text as well as a core component of the methodological toolkit for anyone conducting Indigenous research or using Indigenous population statistics.

In most planning practice and research, planners work with quantitative data. By summarizing, analyzing, and presenting data, planners create stories and narratives that explain various planning issues. Particularly, in the era of big data and data mining, there is a stronger demand in planning practice and research to increase capacity for data-driven storytelling. Basic Quantitative Research Methods for Urban Planners provides readers with comprehensive knowledge and hands-on techniques for a variety of quantitative research studies, from descriptive statistics to commonly used inferential statistics. It covers statistical methods from chi-square through logistic regression and also quasi-experimental studies. At the same time, the book provides fundamental
knowledge about research in general, such as planning data sources and uses, conceptual frameworks, and technical writing. The book presents relatively complex material in the simplest and clearest way possible, and through the use of real world planning examples, makes the theoretical and abstract content of each chapter as tangible as possible. It will be invaluable to students and novice researchers from planning programs, intermediate researchers who want to branch out methodologically, practicing planners who need to conduct basic analyses with planning data, and anyone who consumes the research of others and needs to judge its validity and reliability.

Quantitative Equity Portfolio Management brings the orderly structure of fundamental asset management to the often-chaotic world of active equity management. Straightforward and accessible, it provides you with nuts-and-bolts details for selecting and aggregating factors, building a risk model, and much more.

This book is especially relevant to undergraduates, postgraduates and researchers studying quantitative techniques as part of business, management and finance. It is an interdisciplinary book that covers all major topics involved at the interface between business and management on the one hand and mathematics and statistics on the other. Managers and others in industry and commerce who wish to obtain a working knowledge of quantitative techniques will also find this book useful.

While most construction management books are project based, this book looks at management principles and techniques applied to the day-to-day problems facing a business in the construction industry. It covers: Business strategy Industrial relations Health and safety Managing people Financial management Quantitative methods The text includes end of chapter review questions and a range of illustrative examples. Since the book was first written in 1982 much has changed. The Second Edition has been thoroughly revised and takes account of the increased globalisation of construction, the move from public to private sector work, the drive for productivity, changing procurement methods, new emphasis on life cycle costing and much more. It will provide a valuable text for undergraduate and postgraduate courses in construction management, surveying and civil engineering as well as offering useful insights for practitioners undertaking CPD activities.

This work, which provides a guide for revising and expanding statistical and quantitative methods pedagogy, is useful for novice and seasoned instructors at both undergraduate and graduate levels, inspiring them to use transformative approaches to train students as future researchers. Is it time for a radical revision in our pedagogical orientation? How are we currently teaching introductory statistics and quantitative methods, and how should we teach them? What innovations are used, what is in development? This ground-breaking edited volume addresses these questions and more, providing cutting-edge guidance from highly accomplished teachers. Many current textbooks and syllabi differ in only superficial ways from those used 50 years ago, yet the field of quantitative methods—and its relationship to the research enterprise—has expanded in many important ways. A philosophical axiom underlying this book is that introductory teaching should prepare students to potentially enter more advanced quantitative methods training and ultimately to become accomplished researchers. The reader is introduced to classroom innovation, and to both pragmatic and philosophical challenges to the status quo, motivating a broad revolution in how introductory statistics and quantitative methods are taught. Designed to update and renovate statistical pedagogy, this material will stimulate students, new instructors, and experienced teachers.

Quantitative methods and mathematical modelling are of critical importance to fishery science and management but, until now, there has been no book that offers the sharp focus, methodological detail, and practical examples needed by non-specialist fishery scientists and managers, and ecologists. Modelling and Quantitative Methods in Fisheries fills that void. To date, methodology books in fisheries science have been limited to cookbook approach to problems; simple compilations; or expositions in which either too much theory or insufficient methodological detail is given. The text is organized into three sections:
an introduction to modelling in fisheries and ecology, a straight methodology section covering a range of methods, and a section focusing on specific fields in fisheries science. This book is timely as it addresses a topic of recent debate in fisheries and ecology, describing and comparing the uses of Least Squares, Maximum Likelihood, and Bayesian quantitative methods. Designed as stand-alone units, each chapter provides examples from both classic and recent literature and comes with dedicated Excel spreadsheets that permit you to delve into every detail of the analysis. All of these spreadsheets serve as active examples, which can easily be modified and customized and can be used as templates for analyzing your own data. The spreadsheets permit you to learn at your own speed and cover the simplest linear regression to the more complex non-linear modelling using maximum likelihood. Data analysis and modelling are best learned by doing and not just by reading. This book illustrates, step by step, the analyses it covers. More detailed in terms of introductory quantitative methods and modelling as applied to fisheries than any other book available, Modelling and Quantitative Methods in Fisheries gives you the advantage by supplying the full details of the analysis so that understanding the material is a matter of following the book.

Fundamental Theories of Mega Infrastructure Construction Management: Theoretical Considerations from Chinese Practices is a collection of decades of research and applications of managing megaprojects using theories of complex systems and management sciences. It presents basic (classical) theory of megaproject management and is a showcase of more than 30 years of research of complex system and management sciences on the theory of megaproject management resulting from the integrating of theory and practice of megaprojects. The theory and models have undergone rigorous systematic testing during the management and implementation of megaprojects in China. Megaprojects are huge undertakings, often in infrastructure (bridges, tunnels, airports, etc.) that involve huge levels of investment, often take years to complete, and typically run into delays, cost overruns, and any number of unforeseen problems. Over the last few decades, no one country has undertaken more of these projects than China, and this book presents the fundamental theories underlying the practice of Mega Infrastructure Construction Management as practiced in China. Individual chapters provide a basic definition of Mega Infrastructure Construction and it’s management; an overview of the theories behind it; the Formation Path; basic concepts; fundamental principles; scientific problems; the Method System of Meta-synthesis; specialized methods in research; and intelligent management of Mega Infrastructure Construction. Although the theoretical construction management problems in this book are derived from construction practices in China, they can be applied universally and extended for great fundamental significance.

Quantitative Methodologies using Multi-Methods is a multifaceted book written to help researchers. It is a user-friendly introduction to the popular methods of data mining and data analysis. The book avoids getting involved into details that are more suitable for more advanced users; it is written for readers who have, at most, a surface-level knowledge of the methods presented in the book. The book also serves as an introductory guide to the subject of complementarity of the tools and techniques of data analysis. It shows how methods could be used in synergy to offer insights into the issues that could not be dissected by any single method alone. This text can also be used as a set of templates, where, given a set of research questions, the investigator could identify a set of methodological modules for answering the research questions of interest. This is not entirely unlike the relationship between the analysis and design phases of the systems development life cycle—where the What of the analysis phase has to be translated into the How of the design phase. The book can guide the identification of modules (the How) that are suitable for answering research questions (the What). It can aid in transitioning a conceptual domain of the research questions into a scaffolding of data analytic and data mining methods. The book is also a guide to exploring what data under investigation holds. For example, an investigator may use the methodological modules presented in this book to generate a set of preliminary questions which, after a careful consideration and a requisite culling, could be formulated into a set of questions consistent within a selected theory or a framework. Finally, the book can be used as a generator of new research questions. Applying every method in each of the book’s modules opens a new dimension ripe with follow-up questions such as, Why is this so? The answers to this question may provide new insight and lead to the development of a new theory.

Quantitative Methods for the Project Manager is for professional project managers who need to know how to make everyday use of numerical analysis. It
combines theory and practices and is designed to be easily applied.

Singh introduces valuable techniques for weighing and evaluating alternatives in decision making with a focus on risk analysis for identifying, quantifying, and mitigating risks associated with construction projects.

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