Preface ....................................................................................................................... xviii

Chapter 1
Predictive Analytics for Infrastructure Performance .................................................... 1
  Sue McNeil, University of Delaware, USA
  Susanne Trimbath, STP Advisory Services, LLC, USA
  Farzana Atique, University of Delaware, USA
  Ryan Burke, U.S. Air Force Academy, USA

Chapter 2
Structural Equation Modeling Algorithm and Its Application in Business Analytics ........ 17
  Shahryar Sorooshian, Universiti Malaysia Pahang, Malaysia

Chapter 3
An Integrated Fuzzy VIKOR Method for Performance Management in Healthcare .......... 40
  Ehsan Shekarian, University of Malaya, Malaysia
  Salwa Hanim Abdul-Rashid, University of Malaya, Malaysia
  Ezutah Udonye Olugu, UCSI University, Malaysia

Chapter 4
An Analytical Algorithm for Delphi Method for Consensus Building and Organizational
Productivity .................................................................................................................. 62
  Abd Hamid Zahidy, Universiti Malaysia Pahang, Malaysia
  Noor Azlinna Azizan, Universiti Malaysia Pahang, Malaysia
  Shahryar Sorooshian, Universiti Malaysia Pahang, Malaysia

Chapter 5
New Product Development and Manufacturability Techniques and Analytics .................. 80
  Alan D. Smith, Robert Morris University, USA

Chapter 6
Transformation of CRM and Supply Chain Management Techniques in a New Venture .......... 96
  Amber A. Ditizio, Texas Woman’s University, USA
  Alan D. Smith, Robert Morris University, USA
Chapter 7
A Hybrid AHP-ELECTRE I Multicriteria Model for Performance Assessment and Team Selection

Ikram Khatrouch, University of Lyon, France & University of Saint Etienne, France
Lyes Kermad, University of Paris 8, France
Abderrahman el Mhamedi, University of Paris 8, France
Younes Boujelbene, University of Sfax, Tunisia

Chapter 8
Predictive Modeling as guide for Health Informatics Deployment

Fabrizio L. Ricci, Italian National Research Council, Italy
Oscar Tamburis, University of Naples Federico II, Italy

Chapter 9
Analytics Overuse in Advertising and Promotion Budget Forecasting

Burçin Güçlütürk, Universitat Ramon LLull, Spain
Miguel-Ángel Canela, University of Navarra, Spain

Chapter 10
Mastering Business Process Management and Business Intelligence in Global Business

Kijipokin Kasemsap, Suan Sunandha Rajabhat University, Thailand

Chapter 11
Information and Communication Technology Impact on Supply Chain Integration, Flexibility, and Performance

Carlos A Talamantes-Padilla, Universidad Autónoma de Ciudad Juárez, Mexico
Jorge Luis García-Alcaraz, Universidad Autónoma de Ciudad Juárez, Mexico
Aide A. Maldonado-Macias, Universidad Autónoma de Ciudad Juárez, Mexico
Giner Alor-Hernández, Instituto Tecnológico de Orizaba, Mexico
Cuahtemoc Sánchez-Ramírez, Instituto Tecnológico de Orizaba, Mexico
Juan L Hernández-Arellano, Universidad Autónoma de Ciudad Juárez, Mexico

Chapter 12
A Causal Analytic Model for Labour Productivity Assessment

Manoj Kumar, International Engineering Services, India
Jyoti Singh, International Engineering Services, India
Priya Singh, International Engineering Services, India

Chapter 13
Effective Tools for Improving Employee Feedback during Organizational Change

Tanja Sedej, Graduate School of Government and European Studies, Slovenia
Gorazd Justinek, Graduate School of Government and European Studies, Slovenia
Chapter 2
Structural Equation Modeling Algorithm and Its Application in Business Analytics

Shahryar Sorooshian
Universiti Malaysia Pahang, Malaysia

ABSTRACT

Structural Equation Modeling (SEM) is a statistical-based multivariate modeling methods. Application of SEM is similar but more powerful than regression analysis; and number of scientists using SEM in their research is rapidly increasing. This review article algorithmically discusses the SEM methodology. SEM strategies, SEM steps and SEM stages are introduced in this article; validity tests are presented as well. Novelty of this article is in modified steps of SEM application in modeling strategies, also in its developed practical comprehensive SEM application flowchart. This article is a roadmap for business advisors and those scholars trying to compute SEM for their decision making, complex modeling and data analysis programming.

INTRODUCTION

Structural equation modeling, also known as SEM, is referred to as one of the most effective multivariate statistical tool for analysis. The extent to which SEM’s technique is applied to relationship analysis simply ranges from independent and dependent variables to complex analysis of measurement equivalence for first and higher order constructs (Cheung 2008). The framework for developing and analyzing complex relationships among a number of variables is flexible and also permits researchers to test the theory’s validity through empirical models. Perhaps its prominent strength is in its capacity to manage errors in measurement, which is among the greatest limitations of most studies. A couple of years back Gonzalez, Boeck and Tuerlinckx (2008), Beran and Violato (2010) and numerous different researchers classified it as a “most of the time” used technique. “With SEM’s strength as a statistical tool to analyze complex relationships among variables, and even posit and test causal relationships with non-experimental data, it allows researchers to explain the development of phenomena” (Beran, et al. 2010). The utilization

DOI: 10.4018/978-1-5225-0654-6.ch002