

**ADVANCES IN BUSINESS AND
MANAGEMENT FORECASTING**

ADVANCES IN BUSINESS AND MANAGEMENT FORECASTING

Series Editors: Kenneth D. Lawrence and
Ronald K. Klimberg

Recent Volumes:

- Volume 1: Advances in Business and Management Forecasting:
Forecasting Sales
- Volume 2: Advances in Business and Management Forecasting
- Volume 3: Advances in Business and Management Forecasting
- Volume 4: Advances in Business and Management Forecasting
- Volume 5: Advances in Business and Management Forecasting
- Volume 6: Advances in Business and Management Forecasting
- Volume 7: Advances in Business and Management Forecasting
- Volume 8: Advances in Business and Management Forecasting
- Volume 9: Advances in Business and Management Forecasting
- Volume 10: Advances in Business and Management Forecasting
- Volume 11: Advances in Business and Management Forecasting

ADVANCES IN BUSINESS AND MANAGEMENT
FORECASTING VOLUME 12

ADVANCES IN BUSINESS AND MANAGEMENT FORECASTING

EDITED BY

KENNETH D. LAWRENCE

New Jersey Institute of Technology, Newark, NJ, USA

RONALD K. KLIMBERG

Saint Joseph's University, Philadelphia, PA, USA



United Kingdom – North America – Japan
India – Malaysia – China

Emerald Publishing Limited
Howard House, Wagon Lane, Bingley BD16 1WA, UK

First edition 2018

Copyright © 2018 Emerald Publishing Limited

Reprints and permissions service

Contact: permissions@emeraldinsight.com

No part of this book may be reproduced, stored in a retrieval system, transmitted in any form or by any means electronic, mechanical, photocopying, recording or otherwise without either the prior written permission of the publisher or a licence permitting restricted copying issued in the UK by The Copyright Licensing Agency and in the USA by The Copyright Clearance Center. Any opinions expressed in the chapters are those of the authors. Whilst Emerald makes every effort to ensure the quality and accuracy of its content, Emerald makes no representation implied or otherwise, as to the chapters' suitability and application and disclaims any warranties, express or implied, to their use.

British Library Cataloguing in Publication Data

A catalogue record for this book is available from the British Library

ISBN: 978-1-78743-070-9 (Print)

ISBN: 978-1-78743-069-3 (Online)

ISBN: 978-1-78743-256-7 (Epub)

ISSN: 1477-4070 (Series)



ISOQAR certified
Management System,
awarded to Emerald
for adherence to
Environmental
standard
ISO 14001:2004.

Certificate Number 1985
ISO 14001



INVESTOR IN PEOPLE

CONTENTS

LIST OF CONTRIBUTORS vii

EDITORIAL BOARD ix

SECTION A FORECASTING APPLICATIONS

THE EFFECT OF RELEASED INFORMATION ON
SEARCHING FOR MISSING CHILDREN: THE CASE
OF THE BABY BACK HOME NETWORK 3
Feng Yang, Yasen Nuermaiti and Zhimin Huang

ENHANCED MULTICRITERIA SCORING MODEL 19
Kenneth D. Ko

FORECASTING TREATMENT OUTCOMES FOR
THE FUTURES DRUG AND ALCOHOL
REHABILITATION CENTER 31
*Virginia M. Miori, Kathleen Campbell Garwood and
Catherine Cardamone*

SECTION B PREDICTIVE ANALYTICS, REGRESSION ANALYSIS AND CLUSTERING IN FORECASTING

AN OVERSAMPLING TECHNIQUE FOR CLASSIFYING
IMBALANCED DATASETS 63
Son Nguyen, John Quinn and Alan Olinsky

FUNDING ANALYTICS: PREDICTIVE ANALYSIS IN A
MAJOR STATE RESEARCH UNIVERSITY 81
*Kenneth D. Lawrence, Stephan Kudyba and
Sheila M. Lawrence*

| | |
|--|-----|
| A NOVEL APPROACH TO FORECASTING REGRESSION AND CLUSTER ANALYSIS | |
| <i>Ronald K. Klimberg, Samuel Ratick and Harvey Smith</i> | 87 |
| | |
| DEVELOPMENT OF A PRACTICAL AND EFFECTIVE FORECASTING PERFORMANCE MEASURE | |
| <i>Ronald K. Klimberg and Samuel Ratick</i> | 103 |
| | |
| SECTION C | |
| TIME SERIES, INTERMITTENT DATA AND SUPPLY CHAIN APPLICATIONS | |
| | |
| ASSESSING THE DESIGN OF CONTROL CHARTS FOR INTERMITTENT DATA | |
| <i>Matthew Lindsey and Robert Pavur</i> | 121 |
| | |
| ON THE CAUSAL MODELS OF FUZZY TIME SERIES | |
| <i>Okan Duru</i> | 137 |
| | |
| MODELING AND FORECASTING WITH FUZZY TIME SERIES AND ARTIFICIAL NEURAL NETWORKS | |
| <i>Okan Duru and Matthew Butler</i> | 155 |
| | |
| FORECASTING IN SERVICE SUPPLY CHAIN SYSTEMS: A STATE-OF-THE-ART REVIEW USING LATENT SEMANTIC ANALYSIS | |
| <i>Sudhanshu Joshi, Manu Sharma and Shalu Rathi</i> | 181 |

LIST OF CONTRIBUTORS

| | |
|--------------------------------------|---|
| <i>Matthew Butler</i> | University of York |
| <i>Catherine Cardamone</i> | Saint Joseph's University |
| <i>Okan Duru</i> | Texas A&M University |
| <i>Kathleen Campbell Garwood</i> | Saint Joseph's University |
| <i>Zhimin Huang</i> | Adelphi University |
| <i>Sudhanshu Joshi</i> | Doon University |
| <i>Ronald K. Klimberg</i> | Saint Joseph's University |
| <i>Kenneth D. Ko</i> | Pepperdine University |
| <i>Stephan Kudyba</i> | School of Management, New Jersey Institute of Technology |
| <i>Kenneth D. Lawrence</i> | School of Management, New Jersey Institute of Technology |
| <i>Sheila M. Lawrence</i> | School of Management and Labor Relations, Rutgers, The State University of New Jersey |
| <i>Matthew Lindsey</i> | Stephen F. Austin State University |
| <i>Virginia M. Miori</i> | Saint Joseph's University |
| <i>Son Nguyen</i> | Bryant University |
| <i>Yasen Nuermaiti</i> | University of Science and Technology of China |
| <i>Alan Olinsky</i> | Bryant University |

| | |
|----------------------|--|
| <i>Robert Pavur</i> | University of North Texas |
| <i>John Quinn</i> | Bryant University |
| <i>Shalu Rathi</i> | Doon University |
| <i>Samuel Ratick</i> | Clark University |
| <i>Manu Sharma</i> | University of Petroleum and Energy Studies |
| <i>Harvey Smith</i> | ARI |
| <i>Feng Yang</i> | University of Science and Technology of China |

EDITORIAL BOARD

EDITORS-IN-CHIEF

Kenneth D. Lawrence
New Jersey Institute of Technology

Ronald K. Klimberg
Saint Joseph's University

SENIOR EDITORS

Patrick Hester
Old Dominion University

Virginia Miori
Saint Joseph's University

Zhimin Huang
Adelphi University

Daniel O'Leary
University of Southern California

Douglas Jones
Rutgers University

Dinesh R. Pai
The Pennsylvania State University

John J. Kros
East Carolina University

William Steward
College of William and Mary

Stephen Kudbya
New Jersey Institute of Technology

Frenck Waage
University of Massachusetts

Sheila M. Lawrence
*Rutgers, The State University of
New Jersey*

David J. Weiss
*Rutgers, The State University of
New Jersey*