# **Information Engineering and Complexity Science – Part II**

**Systems Engineering Procedia Volume 4** 

**Editors:** 

Desheng Dash Wu

ISBN: 978-1-62748-649-1

ISSN: 2211-3819

#### Printed from e-media with permission by:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© by Elsevier B.V. All rights reserved.

Printed by Curran Associates, Inc. (2013)

For permission requests, please contact Elsevier B.V. at the address below.

Elsevier B.V. Radarweg 29 Amsterdam 1043 NX The Netherlands

Phone: +31 20 485 3911 Fax: +31 20 485 2457

http://www.elsevierpublishingsolutions.com/contact.asp

#### Additional copies of this publication are available from:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571 USA Phone: \$45,758,0400

Phone: 845-758-0400 Fax: 845-758-2634

Email: curran@proceedings.com Web: www.proceedings.com



## **SciVerse ScienceDirect**



Systems Engineering Procedia 4 (2012) iii–v

### Contents

Financial Engineering	
Organizational Adaptation to Complexity: A Study of the South African Insurance Market as a Complex Adaptive System Through Statistical	
Risk Analysis	
S. Paul, B. Twala, T. Marwala	1
Quantile Hedging for Equity-Linked Life Insurance Contracts with Stochastic Interest Rate A. Melnikov, S. Tong	9
Coherent Distortion Risk Measures in Portfolio Selection M.B. Feng, K.S. Tan	25
Comparing the Forecastability of Alternative Quantitative Models: A Trading Simulation Approach in Financial Engineering M. Zheng, M. Jia	35
Analysis of Mean-VaR Model for Financial Risk Control	40
Z. Sheng, B. Shi, Z. Wen	
T. Ling, F. Liu, Y. Xu	46
Z. Li, L. Ke, K. Wang, X. Shen	54
On Debt Maturity Structure of Listed Companies in Financial Engineering	
Q. Zhang, Q. Zhang, J. Gan	61
Energy Engineering	
The Research of Comprehensive Evaluation Model for Thermal Power Equipment based on Life Cycle Cost	
G. Zhang,W. Wang	68
Generation and Transmission Expansion Planning based on Game Theory in Power Engineering	
X. Li, Y. Li, X. Zhu, M. Zeng	79
Market Equilibrium based on Renewable Energy Resources and Demand Response in Energy Engineering	
D. Liu, L. Li, Y. Chen, M. Zeng	87
Risk Assessment of Concentrating Solar Power based on Fuzzy Comprehensive Evaluation	
Z. Zou, Y. Wei, X. Sun, M. Zeng	99
Economic Evaluation of Wind-Powered Pumped Storage System	
D. Li, Y. Chen, K. Zhang, M. Zeng.	107
ERP Performance Evaluation of Power Supply Engineering Company based on Gray Triangle Whiten Function	
X. Zhan, X. Xu, H. Liu, M. Zeng	116
Size and Location of Distributed Generation in Distribution System based on Immune Algorithm	
J. Ma, Y. Wang, Y. Liu	124
A novel Electricity Marketing Model Integrating Intelligent Disaster-Recovery System	
S. Li, M. Zeng, L. Li	133
Complexity Measure and Operational Efficiency Evaluation of Electricity Engineering Market	
S. Yang, H. Wang, M. Li	143
A Synergistic Model of Electricity Market based on Complex System Engineering Theory	
C. Li, L. Yuan, J. Sun	153
On Merging the Wind Power Equipment Manufacturing Enterprises into the Wind Power Generation Engineering Group	
X. Song, L. Wang, D. Niu, P. Zu, Y. Guo	161
Short-Term Power Load Forecasting based on IVL-BP Neural Network Technology	
Y. Wang, D. Niu, J. Li	168
Entropy-based Complexity Metrics for Coal Resource Consolidation System Engineering	
Z. Yi, H. Song, C. Li, C. Wang	175
Industrial Engineering	
The Condition based Maintenance Evaluation Model on On-Post Vacuum Circuit Breaker	
Y. Cui, B. Cui	182

iv Contents

Expert System of Fault Diagnosis for Gear Box in Wind Turbine	
ZL. Yang, B. Wang, XH. Dong, H. Liu	189
Understanding the Complex Nature of Engineering Technology Selection: A New Methodology based on Systems Thinking X. Ju, J. Peng, Y. Yin.	196
Safety Evaluation of Smart Grid based on AHP-Entropy Method	
C. Xie, D. Dong, S. Hua, X. Xu, Y. Chen	203
J. Zhou, Y. Wang, B. Li.	210
An Improved Mixed Conjugate Gradient Method  J. Wen, J. Zong, X. Wang	219
Comparison of Several Intelligent Algorithms for Solving TSP Problem in Industrial Engineering	
H. Wang	226
M. Xiong, X. Zhou, D. Xin	236
Decision Making Model based on QFD Method for Power Utility Service Improvement	2.12
N. Li, X. Sun, W. Yang, M. Zeng	243
Complex Networks Economy Systems Engineering in General Synergetic Structure  Q. Bai, D. Niu, J. Bai	252
A Stochastic Differential Game Theory Modeling and Analyzing for Multi-Local-Worlds Graph Directed	
X. Zheng  Transmission Model of Diele Prochdown Structure in Engineering Project Chain based on Entropy Diele Florent	259
Transmission Model of Risk Breakdown Structure in Engineering Project-Chain based on Entropy Risk Element W. Chen, C. Li, Y. Yang, Z. Du	268
Research on the Comprehensive Evaluation of Business Intelligence System based on BP Neural Network	200
SL. Yan, Y. Wang, JC. Liu	275
Fuzzy Economic Order Quantity Model with Imperfect Items, Shortages and Inspection Errors	
J. Liu, H. Zheng	282
System Dynamics Modeling-based Study of Contingent Sourcing under Supply Disruptions	200
M. Huang, M. Yang, Y. Zhang, B. Liu	290
Agent-based Simulation Model of Single Point Inventory System	298
F. Dong, H. Liu, B. Lu	290
D. Niu, L. Fan	305
A Context-Aware Lighting Control System for Smart Meeting Rooms	
C. Li, L. Sun, X. Hu.	314
The Mobilization Point Choice Model of Sole-Resource Demand in System Engineering	
P. Tang, Q. Zhang	324
The Group Decision-Making Rules based on Rough Sets on Large Scale Engineering Emergency  X. Wei, Q. Su, J. Li	331
On Reallocation of Failed Project Resource based on Priority	331
J. Ye, S. You, J. Zhang	338
Queuing Models to Improve Port Terminal Handling Service	220
J. Xu, D. Liu	345
Evolutionary Mechanism of Self-Organization of University Core Competence Construction Engineering System	
F. Zhang Z. Diao.	352
On Reasons of Uncontrollable Construction Cost based on the ABC Analysis Method and the Complete Decomposition Model	250
F. Li, X. Gao, M. Xin	359
T. Wang	366
A Multi-Attribute Reverse Auction Decision Making Model based on Linear Programming	272
M. Yan, Y. Yuan	372
The System Engineering Model on Evaluating the Symbiosis Situation of Industrial Clusters  Q. Yang, H. Lu.	379
Multi-Agent Risk Identifier Model of Emergency Management System Engineering based on Immunology	317
Q. Yang, H. Ma, Y. Yu	385
Dimensions of Firm Integrative Capability from the Perspective of Systems Engineering	
J. Yu.	393
Emergency Events Analysis in Metro Construction Project	
G. Chen, K. Xie, Q. Wu	402
The BP Artificial Neural Network Model on Expressway Construction Phase Risk	400
Chenyun, Z. Yi	409
J. An	416

*Contents* v

Percolation criticality for complex networks	
X. Zheng, X. Xu	424
Problems of Mega-Events Engineering Risk Management in China	
S. Wang, X. Zhang.	431
The Measurement of Operational Risk based on CVaR: A Decision Engineering Technique	
F. Yao, P. Zhang	438
Research on Design Management based on Green Remanufacturing Engineering	
X. Wu	448
Rent-Seeking Behaviors Analysis in Engineering Supervision based on the Game Theory	
S. Zheng, M. Peng	455
The Study of the Core Concept of Safety Culture in Highway Engineering Construction Projects	
S. Zheng, J. Chen	460
Study on Knowledge Sharing Behavior Engineering	
X. Li, S. Ya	468
Demsptere-Shafer Evidence Theory in Enterprise Immunity Evaluation	
J. Zhang	477
A Catastrophe Model on the Evaluation and Classification of Mine Disaster Rescue Measures	
Q. Wu, K. Xie, Z. Chen	484