

# PROCEEDINGS OF THE 13TH INTERNATIONAL CONFERENCE ON LOGISTICS AND SYSTEMS ENGINEERING

**Editors: Zeping TONG, Hanjiang ZHANG, Henry ZHANG**

**Host:**

- 1) Hunan Institute of Systems Engineering and Management (HISEM)
- 2) Business, Nature and Value Research Centre, UK

*Conference Date: March 29-30, 2024*

*Venue: Wuhan, China*

*Publisher: Aussino Academic Publishing House*

**Volume 1 of 2**

**PUBLISH AND DISTRIBUTE BY:  
AUSSINO ACADEMIC PUBLISHING HOUSE**

**WEBSITE: <http://www.aaphpublisher.com.au>  
POSTAL: 14 UNION STREET, RIVERWOOD, NSW 2210,  
AUSTRALIA  
EMAIL: [aaph\\_sydney@hotmail.com](mailto:aaph_sydney@hotmail.com)  
PH: 612 9584 8084**

**English edition copyright © 2024 by Aussino Academic  
Publishing House**

**National Library of Australia Cataloguing-in-Publication data  
[www.librariesaustralia.nla.gov.au](http://www.librariesaustralia.nla.gov.au)  
Subjects: Engineering - Industries - China**

**Editors: Zeping TONG, Hanjiang ZHANG, Henry ZHANG  
Proceedings of The 13th International Conference on Logistics and Systems  
Engineering**

**ISBN: 978-1-7138-9670-8**

**Host:**

- 1) Hunan Institute of Systems Engineering and Management (HISEM)**
  - 2) Business, Nature and Value Research Centre, UK**
- 

**All Right Reserved**

**Disclaimer**

**The material in this publication is of the collection of conference only and does not represent any conclusions from this conference. It is not intended to provide specific guidance for particular circumstances.**

# Table of Content.

---

About Publisher  
Foreword  
Conference Organizers

## PART I: System Engineering

**Realizing K-Coverage placement for UAV base stations with an Improved Variant of SelPSO**

ZHENG Songling, LI Lifu, YUAN Zongyang,  
LUO Lailong ..... 1

**A Causal Discovery Study on Professional Title Promotion of Scientific and Technological Talents in Colleges and Universities based on Bayesian Network**

FU Wenxuan, LI Bo, HAO Yanpuze, ZHU Renq,  
LI Lifu, LUO Lailong ..... 15

**Dynamic Scheduling of Four-way Shuttles Based on Improved Deep Q-learning Algorithm**

Xuemei WANG, Shunran SONG, Yanyan WANG,  
Lilin ZANG, Zijian XU ..... 24

**Carbon emission prediction of Hunan Province based on SOA-GRU**

Zhanguo WEI, Sha DAI, Ya LI, Xiaodong  
YANG, LI Yangwang ..... 32

**Analysis of The Coupling Coordination Relationship and Influencing Factors between Regional Logistics and High-Quality Economic Development under Digital Economy**

Luqing Wu, Yihua LI, Siying Wang,  
Mengjie Deng, Yalun Sun ..... 45

**Value Co-creation of Multiple Subjects in Digital Intelligence Innovation Ecosystems: An Evolutionary Game Analysis**

Yuqiong LI, Liping WU, Jiale LI ..... 57

<b>Empirical Study on Emergency Materials Dispatching Model</b>	Hui WANG, Ke Shuang REN .....	71
<b>Mixed Equity Participation and Corporate Performance</b>	LI Danqing, LI Ziyue .....	79
<b>ESG Innovation Practice of Real Estate Enterprises Under the Background of High-quality Development - Take China Resources Land Corporation and Cifi Group as Examples</b>	Yi Feng, Ya Liu .....	88
<b>Research on Expert System for Quality and Safety Risk Identification of Pre-made Dishes Based on Knowledge Integration</b>	Cui LI, Guoping CHEN, Feng LI, Yue WU .....	97
<b>Research on the Influence of Investor Sentiment on A-Share Market Returns And Volatility</b>	Qiao Jiayun .....	111
<b>Industry Characteristics, CEO's Peripheral Functional Background and Corporate Sustainable Development: Evidence from China</b>	Yi Feng, Ya Liu .....	120
<b>Research on the Influence of Foreign Capital on The Efficiency of Mixed Ownership Enterprises</b>	Li Danqing, Li JiaSheng .....	127
<b>Multi-objective Scheduling Method for The Handling Work Center Considering Equilibrium Degree of Workpiece Handling</b>	Jili Kong .....	133
<b>Post-disaster Road Network Assessment Based on Truck-Drone Collaboration System</b>	Qing SU, Zeping TONG .....	142
<b>Research on Retail Product Delivery Based on Two Stage Algorithm</b>	Hui Shu, Yuqing Zeng .....	150

**Remaining Useful Life Prediction Based on Hybrid Convolutional Neural Networks and Multi-Layer Perceptron**

Shunran SONG, Xuemei WANG,  
Yanyan WANG, Zijian XU ..... 157

**Evaluation on the Effect of Higher Vocational Education Empowering Rural Revitalization in Hunan Province**

Xu Juan ..... 168

**PART II: Logistics**

**Study on Path Optimization of Unmanned Delivery Vehicles Based on Improved Hybrid A\* and DWA algorithm**

Jiaqi He, Ruijun Zhang, YunFeng Ma,  
Longhu Zhang ..... 177

**Collaborative Development Countermeasures of Logistics Industry and E-Commerce in Jilin Province**

Ying Wang, Lishuang Zhou,  
Xubao Wang ..... 187

**Multi-Agent Dynamic Distribution and Route Replanning via Reinforcement Learning**

Shengwei Li, Zeping Tong ..... 193

**Research on Fresh Food Logistics and Distribution Service Based on AHP and Set-Pair Analysis Method**

Longhu Zhang, Ruijun Zhang, Jiaqi He,  
Menghao Wang, Yixuan Liu ..... 203

**Research on the Impact of Rural E-commerce Logistics Service Encounter on Customer Satisfaction**

Shujun Yu, Lingjie Zeng ..... 214

**Research on Vehicle Routing Optimization of Multi-depot Semi-open Cold Chain Logistics Considering Carbon Emissions**

Huan LIU, Yong LIU, Nanxing WANG,  
Yuan XIONG, Xuedi WANG ..... 224

**Analysis on The Forecast of Logistics Demand of Urban Agricultural Products in Hunan Province**

Yong LIU, Yuan XIONG, Huan LIU,  
Xianglin ZHOU ..... 233

**Research on Emergency Logistics Center Site Selection Based on GIS and Multi-Factor Decision Making Methods**

Siyue Liu, Zeping Tong ..... 241

**Research on Synergistic Development of Regional Logistics and Regional Economy Based on PCA-GRA**

Cai-hong YOU, Peng-lin YU ..... 253

**Research on spatial Layout Planning of Logistics Hub Network Based on Genetic Algorithm-Taking China's Hunan Province as an Example**

Yu Liang, Xiaoyong Zhu, Zhiming Zhang,  
Yang Guo, Jing Chen ..... 264

**Research on the correlation between Port Logistics and Urban Economic Development Based on Grey Relation Analysis Model**

Chaodong LU, Yuanlei YIN,  
Baoliang YANG ..... 282

**Agricultural Products Logistics Demand Forecasting of Hubei Province Based on GGB Combined Model**

TONG Zeping, WANG Huan ..... 290

**Vehicle Path Optimisation Based on Combinatorial Algorithms**

Xianglin Zhou, Yong Liu, Huan Liu,  
Yuan Xiong, Hongan Lin ..... 302

<b>Evaluation of Logistics Efficiency of Port Logistics Enterprises based on DEA-Malmquist</b>	Jiabin WANG .....	309
<b>Crayfish Cold Chain Logistics Demand Forecast Research in Hubei Province</b>	Hong ZHANG, Penglong FAN .....	316
<b>Research on Optimization of Cold Chain Logistics Distribution Path - Taking S Aquatic Products Wholesale Market as an Example</b>	Decai Liu, Yutong Xie .....	325
<b>Research on the Location of Campus Driverless Delivery Stations</b>	Shu JIN, Yan PANG .....	334
<b>A New Approach for Green Vehicle Routing Problem with Stochastic Travel Speeds and Time Windows</b>	Yanling FENG .....	346
<b>Research on the Development of Green Logistics of Traditional Chinese medicines in Bozhou City</b>	Xiaoyan Li, Chaodong Lu .....	355
<b>Research on Logistics Efficiency and Its Influencing Factors in the Yangtze River Economic Belt Considering Carbon Emissions</b>	Shujun Yu, Zihang Wang .....	369

### **PART III: Supply Chain**

<b>Study on Quality Loss of Service-oriented Manufacturing Network Module Nodes Based on SVM</b>	Ping Liu, Liangqing Feng .....	381
<b>Study on the Factors Influencing Emergency Smart Supply Chain Quality</b>	Liangqing Feng, Xinying Wu, Haolun Wang .....	396

**Impact of Social Media on Consumer’s Willingness to Purchase Huanggang Willow Weaving**

Xuemei ZHANG, Lijuan LI,

Yu WANG, Liang WU ..... 408

**Supply strategy for the Precise Integration of Characteristic Agricultural Products Based on Neural Networks**

Zhonghong CAO, Fangjian ZHOU,

Qingquan LI ..... 416

**Evaluation of Operational Efficiency and Analysis of Influencing Factors of Agricultural Waste Recycling Enterprises Based on Supply Chain Perspective**

Li Shuangyan, Zhang Yachong, Ren Teng,

Jiang Chao, Zhang Dezhi ..... 425

**The Effect of Replenishment Policies on the Bullwhip Effect in Supply Chains with a SARMA Demand Process**

Weiming Yun, Tao Zhou, Sheng Cao ..... 439

**Research on the Blockchain Introduction Strategy of Cross-border Dual-Channel Supply Chain Based on Tax Differences**

Lin JIANG, Aibo YAO, Wei LI ..... 448

**Evaluation of Emergency Supply Chain Resilience under Emergencies**

Xinyan CAI, Wenping XU ..... 480

**The Construction of A Two-Level Emergency Materials Supply Network Considering The Emergency Response Levels**

Xinya Wang, Yanhao Hu, Long Zhang,

Jing Zhang ..... 492

**Research on the Cost-oriented Financial Supervision Mode of Fruit and Vegetable of Agricultural Products Cold Chain**

Xin QI, Yan PANG ..... 499



## Part IV Digital Transformation in Logistics

### **Evaluation and Analysis of Safety and Economic Benefits of Retrofitting Heavy Duty Vehicles with Hydraulic Retarders**

CHEN Yingying, HUANG Jungang ..... 508

### **Research on the Logistics Center Layout Planning of Company A under the Background of Carbon Emission Constraints**

LU Shengrong, WANG Xiaoyu ..... 514

### **Game “Wordle” Optimization Strategy Research**

WANG Xin, QI Xinshe, GAO Cuicui, WANG Na,  
ZHANG 'AJie, ZHANG Lili ..... 520

### **Performance Impact of Government Subsidy on Dual-Channel Supply Chain of Fresh Agricultural Products**

ZI Wucheng, LI Gongdong,  
HU Xiaojie ..... 529

### **Industrial Process Data Augmentation Method Based on BC-WGAN**

CHEN Zhiwei ..... 538

### **Research on the Scheduling Modeling of Urban Rail Transit Network Emergency Resources**

WU Zhibang, GUO Xin ..... 544

### **Location Selection of Transfer Station Based on Binary Semantic and Fuzzy Evaluation Tendency Model**

CHEN Junhao, WU Xiu, GAO Zubin,  
CAI Yue, XIAO Meisheng ..... 553

### **Research on Design Method and Technology of Complex System Engineering Based on MBSE**

GUO Chao, YU Lingtao, YAO Quanbin,  
ZHUANG Lei, GUO Mo ..... 564

**Evaluating the Coupling Coordination Degree between New Urbanization and Logistics Industry Development in the Guangxi Beibu Gulf Economic Zone**

CHOU Chingchih, CHEN Haifang,  
CHENG Chunyen ..... 572

**Effects of Fairness Concern on Decisions and Performance in IT Supply Chain**

REN Tinghai, LIU Kaixuan, WANG Dafei,  
ZENG Nengmin ..... 577

**Research on Dynamic Optimization of Construction Site Layout of Railroad Business Line Based on BIM 4D Technology**

DUAN Xiaofeng, MA Ruiyuan, LI Yong ..... 595

**The Evaluation Research of Beijing-Tianjin-Hebei Logistics Industry and Regional Economic Development**

LI Yinghua ..... 608

**The Study of Factors Affecting the Port Railway Freight Increment in Shandong**

Ma Xinran ..... 622

**A Novel STGCN-BiLSTM Hybrid Model for Short-Term Traffic Flow Prediction on Freeway**

TANG Jiali, QIE Kun, MO Yurong, GO Xiaofeng,  
LI Chenji, LI Zhihong ..... 630

**The Analysis of Intact Stability and Longitudinal Strength of Transportation for the Upper Block of an Offshore Booster Station**

Wei Deng, Weiguo Ran, Shude Chen ..... 647

**Analysis of Water Field Characteristics of Airport Roadbed in Seasonal Frozen Area**

Zhaoxian Cao, Xingzhong Zhang,  
Xingsheng Zhang ..... 655

**Analysis on Consumers' Purchasing Intention for Agricultural Produce and the Influencing Factors of Live-streaming Platforms: An Empirical Study Based on Binary Logistic Model**

Li LIN, Zhenliang WANG ..... 661

**"Number intelligence" lean supply chain system construction**

SHEN ShuJie, XIAO Jingcheng,

LIAO Guomin, HE Ye ..... 670

**The Discussion on the Application of Multi-area Collaborative Design of Project single device for Digital handover of Chemical Industry**

SUN Guanhua, HE Yongjin, WANG Jidong, JIANG Jiding,

SUN Jianbin, JIANG Yue ..... 678

**Research and Application of Intelligent Sorting System Based on RFID Passive Sensing Technology**

ZENG Shixian, XUE Rui ..... 687

**Package Path Planning and Implementation of Honeycomb Intelligent Sorting Platform**

SONG Xin, ZHANG Li, QIAN Wenhao ..... 697

**Modeling and Analysis of Green Supply Chain Decision Problem Considering Fairness Concerns Based on Game Theory**

YANG Jiahe ..... 711

**Overview of Traffic Flow Cellular Automata Model Based on Special Application Scenarios**

YANG Fengman, SONG Xianghui, WANG Dongzhu,

SUN Ling, SONG Chengcheng ..... 721

**Multi-Depot Vehicle Routing Optimization of Aquatic Product Cold Chain Logistics Based on Improved Ant Colony Algorithm**

YAN Liying ..... 731

**Research on Tacit Knowledge Sharing in Green Supply Chain Based on Improved SIR Modeling**

WANG Xiaohe ..... 740

<b>Bullwhip effect reduction experiment: nonlinear autoregressive (NAR) neural networks, information sharing and compensation</b>	HE Zhexin, ZHANG Huan .....	750
<b>Research on Low-Carbon Cold Chain Logistics Path Optimisation based on Improved Genetic Algorithm</b>	ZHANG Feiyan .....	759
<b>Optimisation Scheme Design of Hotel Chain Logistics Distribution System based on RFID Technology</b>	LI Ting .....	776
<b>Neural Network-Based Time Series Forecasting Method for Financial Data</b>	SHAO Jia, ZHANG Guicai, QIN Yi .....	789
<b>Research on Model Construction of Pneumatic Braking System Valve Components</b>	JIANG Tao, LU Wenming, WANG Tianxiao .....	796
<b>Forecasting Sales Volume through BP Neural Network Model Considering Multiple Factors</b>	WANG Feng, Joey AVILES .....	804
<b>Research on the Logistics Distribution Center Location Problem Based on K - Means Clustering Algorithm</b>	WANG Ping .....	811
<b>Design of Carbon Transaction Hierarchical Blockchain System Based on IoT and Smart Contract</b>	SUN Peng .....	818
<b>On Blockchain-aided Storage Method for the Big Data of Customers in Power Grid</b>	LI Baoshang, JIANG Luhua .....	828

<b>The Research of Intelligent Vehicle Dispatching Technologies Based on Informatization System in Mine Mountains</b>	CHEN Tao, LIAO Xudong, LI Zengyan .....	834
<b>Location Optimization of Automated Warehouse Based on Swarm Intelligence Optimization Algorithm</b>	WANG Jiajing, LIU Di, ZENG Yingyuan .....	841
<b>Electronic Commerce in Tourism Industry under Computer Technology</b>	ZHENG Song, ZHAO Jing, SONG Deqiang .....	855
<b>Risk Assessment for International Trade Finance under Digitization Background Based on Mixed Attention and Residual Network</b>	XIA Bing .....	861
<b>Design of Digital Rights Management System Based on Blockchain</b>	ZHANG Yuhao, WU Jiaqi, YI Haibo, DENG Weiping, QU Tao .....	869
<b>Optimization Method of Subway Train Boarding and Alighting Time Based on Logistics Service Quality Theory</b>	HE Yuxin, HU Hua, HOU Xiangyu, SHI Pingcui .....	876
<b>Research on the Decision of Power Battery Recycling Based on EPR System</b>	HUANG Juan, FU Zhipeng .....	883
<b>Design and Research of Intelligent Shared Express Box Based on Single-chip Microcomputer Control</b>	LIN Aiqin, ZHANG Fangfang .....	890
<b>Big Data -Based E-commerce System Supply and Demand Analysis Design Research</b>	GAO Jing .....	896

**Research on Intelligent Analysis Platform of Big Data Based on Pycurl Data Acquisition**

YANG Weichao, LI Hanning, ZOU Yu, LI Dannong,

ZHAO Yi, SUN Jiaqi ..... 904

**Application of Blockchain Marketing Technology Based on Consistent Consensus Algorithm in Logistics Information Platform**

LIU Dan ..... 911

**The Impact of Digital Transformation on the Efficiency of Enterprise Supply Chains: Based on Multidimensional Fixed Effect Model**

LI Zhihui, GUO Xiaoming,

ZHANG Junliang ..... 924

**Author's Index**

---

**END**