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"Sustainable Digital Logistics"

20-21 October 2022
Istanbul-Turkey

İSTANBUL BEYKENT ÜNİVERSİTESİ

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International Logistics and Supply Chain Congress Program

20 October 2022

Session	Time	Speakers
Kayıt	08:30-09:30	
Session 1: Openning	09:30-10:00	**Assoc. Prof. Dr. Arzum Özgen** **Prof.Dr. Gülçin Büyüközkan**, Head of Logistics Association (LODER) **Prof.Dr. Kazım Sarı**, Beykent University Vice Rector **Prof.Dr. Murat Ferman**, Beykent University Rector
Session 2: Keynote Speaker	10:00-10:45	**Prof.Dr. Peter Franke**, Kiel University of Applied Sciences, Germany
	10:45-11:15	Coffe Break
Session 3: Keynote Speakers	11:15-12:45	**Dr. Canan Ölçer**, Borusan Logistics Vice general Manager **Dr. Doğan Hasan**, UnoPro Production and Consulting
	12:45-14:00	Lunch Break
Session 4: Invited Speakers	14:00-15:30	**Sustainable Digital Logistics** Moderator: **Dr. İbrahim Uzpeder**, Beykent University **Dr. Murat Baştor,** General Manager (Transportation and Infrastructure Services Regulation- UAB Ulaştırma Hizmetleri Düzenleme Genel Müdürü) **Ayşem Ulusoy,** Head of the Association of International Forwarding and Logistics Service Providers (UTİKAD Başkanı)
	15:30-16:00	Coffe Break
Session 5: Invited Speakers	16:00-17:30	**Sustainable Digital Suppy Chain** Moderator: **Prof.Dr. Mehmet Tanyaş**, Maltepe University **Tayfun Namdar,** Yıldız Holding Ülker Supply Chain Director **Dr. Ayşegül Ketenci**, Head of International Carreers Assoc. (UND)

International Logistics and Supply Chain Congress Program

21 October 2022

SESSION	TIME	ONSITE	VIRTUAL CLASS 1	VIRTUAL CLASS 2	VIRTUAL CLASS 2
Session 1		Presentations will be held in **Conference room**	https://zoom.us/j/98877086654 Meeting ID: 988 7708 6654 Supply Chain Management	https://zoom.us/j/95028426663 Meeting ID: 950 2842 6663 Logistics Management	https://zoom.us/j/97516651697 Meeting ID: 975 1665 1697 Miscellaneous
	10:00-10:20	**A Bibliometric Analysis on Reverse Logistics in E-Commerce** Seza GÖNEN, Erkut AKKARTAL, Ece ÜNALMIŞ	**Fresh Fruit and Vegetable Price Inflation in News: A Critical Discourse Analysis of Newspaper Reporting in Turkey** Fatmanur AVAR ÇALIŞKAN, Seda ÖZCAN	**Determination of Waste Drugs (Medical) Collection Model and Landfill for Istanbul Anatolian Side** Süleyman N. TAŞKAYA, Batuhan KOCAOĞLU	**Customer Experience Management in Pharmaceutical Sector: an Interview Study** Songül AKSOY
	10:20-10:40	**Examination of Supply Chain Risk Management in Terms of Sustainability** Hacide Berfu DEMİR, Şule ÖNSEL EKİCİ	**3D Printer Technology from Supply Chain Sustainability Perspective** Dursun BALKAN, Arzu AKYÜZ	**Parcel Locker Applications in Turkey** Kutay AKDOĞAN, Eren ÖZCEYLAN	**Determining Supply Chain Strategies by SWOT Analysis : A Case Study** Songül AKSOY
	10:40-11:00	**Multiple Performance Measurement Model (Comet) for the Measurement of Container Port Performances Globally During and Before the Pandemic Period** Mücahit ŞİŞLİOĞLU	**Blockchain in Agri Food Industry: Cherry Product Application** Şebnem İNDAP, Mehmet TANYAŞ	**Home Health Care Assignment, Scheduling and Routing Problem: An Application for a State Hospital** Gülçin BEKTUR, David NEMBHARD	**AN EXACT SOLUTION FOR REAL-LIFE TRANSSHIPMENT PATH PROBLEM** Zahra HAYIZOĞLU GÖKDAĞ, Salih CEBECİ
	11:00-11:20	**Decarbonizing Logistics as National Policy: TIMBER Framework Analysis of Turkey** İbrahim UZPEDER	**The Impact of Using Nearshoring on Sustainable Global Textile Supply Chain** Dursun Özgür SARIOĞLU	**Understanding Last Mile Logistics in the Age of Micro-mobility: A Review** Ahmet Tuğrul TUĞER	**A MCDM Model Proposal and Solution for Evaluating Agile Methods Used in Supply Chain Management** Nilay YÜCENUR, Sena ÇALIŞKAN, Özge İRTEN, İlker ŞAHİN
	11:20-11:40	**The Impact of Foldable Containers on Saving Containership Bunker Costs** Koichi SHINTANI, Etsuko NISHIMURA, Akio IMAI	**Identifying And Analyzing the Risk Factors Of Sustainable Supply Chain Management In Textile Sector** Şölen ZENGİN, Emel YONTAR	**A Study on Critical Factors of Digitalization in Reverse Logistics** Yeşim ÖZEN, Volkan YAVAŞ	**Identifying the Key Success Factors of E-Logistics in Turkey: An application of analytic Hierarchy Process (AHP)** Emre Kadir ÖZEKENCİ
	11:40-12:00	**Prioritizing Vulnerability Factors of Food Supply Chains by Fermatean Fuzzy Analytical Hierarchy Process** Selin YALÇIN, Ertuğrul AYYILDIZ	**Possibilities and Limits of Digitalization to Increase Supply Chain Resilience** Marc-André WEBER, Peter FRANKE, Ulrike AUMÜLLER	**A Mathematical Model for Multi-Objective Cargo Routing Problem with Balance Considerations** Elif KURUNMAK, Ece Arzu YILDIZ, Fulya ALTIPARMAK	**Electronic Waste Forecasting with Deep Transfer Learning** Begüm EROL, Tülin İNKAYA

International Logistics and Supply Chain Congress Program (cont')

21 October 2022

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12:00-12:20		A Model Proposal in Green Supply Chain Management: The Case of Turkey Ebru Pekel ÖZMEN, Hasibe Berfu DEMİR	Sustainable Vehicle Allocation Decisions in Rd Transportation Environments: A Co-Opetition System Proposal Mustafa ÇİMEN	Fashion Industry's Production and Supply Chain Standards on the Path to Compliance with the Human Right of Access to a Clean, Healthy, and Sustainable Environment Ulrike AUMÜLLER, Marc-André WEBER
12:20-12:40		Supply Chains for Valorization of Olive Grove Residues and Olive Oil Industry by Products: A Review on Research and Literature on Olive Based Bioeconomy Tümay YAVUZ	European Green Deal for a Sustainable Global Trade: Comparing Eu Countries and Turkiye Tuğçe Danacı ÜNAL	Hub and Distribution Center Location for a Third-Party Logistics service Provider: A Case Study at Tehran ZahraSADAT HASANPOUR JESRI, Nima POURMOHAMMADREZA, Seyed Farbod FARNİA, Seyed Omid HASANPOUR JESRI
12:40-13:00		Evaluation of Ports by ANP-BOCR Method in Terms of Green Port Potential Büşra KESKİ, İskender PEKER, A. Cansu GÖK KISA	Fuzzy Inference: Design and machine learning approach for UAV image: case of virus contamination Esra ÇAKIR, Furkan ERDİ	An Evaluation of Transport Model with the Beresford Model for Intermodal Routes Between Turkey and Southern and Central European Countries Mustafa Batıkan ONUK, Ezgi UZEL AYDINOCAK
13:00-13:20		Weapons Organized Industrial Zone Location Selection for TR90 Region with an Integrated Multi-Criteria Decision-Making Approach Fatma Nur TİP, İskender PEKER	Determination of the Most Appropriate Debris Dumping Area with The Integrated ANP- TOPSIS Method: A Case of Ankara Kader AYGÜN, Merveenur SELİM, Bilge BATTAR, Zeynep ARSLAN, İskender PEKER	Logistics Centers for Sustainable and Smart Logistics Mobility: Literature Survey Kürşat ERDOĞAN, Mehmet TANYAŞ
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Paper 1: DETERMINATION OF WASTE DRUGS (MEDICAL) COLLECTION MODEL AND LANDFILL FOR ISTANBUL ANATOLIAN SIDE

Prof. Dr. Batuhan KOCAOĞLU[1], Süleyman Nejat TAŞKAYA[2]

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With the development of technology, there has been an increase in the variety and amounts of drugs, as in all areas of life. Medicines are used in the treatment of many diseases. Prescription/nonprescription drugs are taken by households and used in the treatment of related diseases. Medicines become waste medicine in homes, sometimes due to the end of the treatment and sometimes due to the expiration date. These waste drugs at home are disposed of in various ways and as a result harm nature (water resources, soil and atmosphere).
Our topic is to reduce the harm of household medicine wastes to the environment and propose process that can enable this. In this context, the collection models of medical wastes from homes and health institutions (Hospitals, Veterinarians, Clinics, Nursing Homes for the Elderly, etc.) and the choice of landfill for medical wastes are discussed.
The criteria (Environmental, Economic, Ground and Social) affecting the selection of the medical waste storage area were determined and the most appropriate storage area was determined by using the multiple decisions making methods AHP (Analytical Hierarchical Process) and TOPSIS (Technique for Order Preference by Similarity).

Keywords: Wastes, Drugs, Multiple Criteria Decision Making, AHP (Analytical Hierarchical Process) and TOPSIS (Technique for Order Preference by Similarity)

Paper 2: FRESH FRUIT AND VEGETABLE PRICE INFLATION IN NEWS: A CRITICAL DISCOURSE ANALYSIS OF NEWSPAPER REPORTING IN TURKEY

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The Turkish economy, which is now the 21st largest economy in the world, has experienced several financial and economic crises since its foundation. These crises bring about important negative economic, financial, social, and political consequences at every turn. It can be seen that Turkey has re-entered this process since last year with depreciation of the Turkish lira, high inflation, rising borrowing costs etc. For this reason, Turkey deals with rising prices especially for food, and high unemployment rate, which constitutes important election issues right now. Based on the TUIK (2021) report, it can be said that the production value of fruits increased by 36. 46% to 92.56 billion TL and the production value of vegetables increased by 9.59% to 55.28 billion TL. Considering the reasons for this increase, it is clearly seen that each supply chain member and government approaches this issue from a different perspective. In this paper, we aim to assess the cause-and-effect relationship related to price increases from a comparative perspective of both parties. By basing on critical discourse analysis, we firstly attempt to understand the reasons for the price increases of fruits and vegetables, and we investigate the discourses of the above-mentioned parties on this issue in order to see closely where they positioned themselves in this crisis. Additionally, we will provide solutions by taking into account the discourses of both sides to help businesses cope with this inflation phenomenon.
To establish a systematic example of newspaper coverage of fruit and vegetable prices, a critical discourse analysis was conducted by employing archives of four Turkish newspapers. The research contains the latest compilation of 250 news, to be organized systematically. We employed open, axial and selective coding in order to analyze the gathered data, and created main and subcategories accordingly. the study compares two types of sources, one relatively government-sided and the other not. From this respect, the research presents a comparative study and develops a novel analysis with potential for further applications. This analysis also reveals the strong influence of industry insiders and how price increases are positioned as both beneficial and “natural order” when creating the discourse of growing food industry news.

Keywords: Fresh Fruit and Vegetable Price Inflation, Field analysis

Paper 3: 3D PRINTER TECHNOLOGY FROM SUPPLY CHAIN SUSTAINABILITY PERSPECTIVE

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In today's supply chain management (SCM), multiple disruptive technologies converge to serve for sustainability. 3D printer (additive manufacturing) is one of the most critical one of these technologies having direct sustainability implications. In this study, a literature review is conducted to reveal the potential of this technology in terms of sustainability. By radically reforming prototyping process, manufacturing and distribution system, the technology provides reductions in transportation, logistics and manufacturing operations. Thus, it directly serves for reducing labor requirements, energy savings, CO2 emission reductions and various cost reductions. By replacing the traditional manufacturing operations, it allows for waste reduction, elimination of rework, repair and scraps for prototyping as well as manufacturing operations. 3D printers also allow for the use of bio gradable materials and better plastic recycling. As such, it directly serves for environmental sustainability results. The technology speeds up design and prototyping process, allowing for direct customer involvement with creative feedback and sustained product innovation. It brings huge customization capabilities with small-lot production at the nearest point to the customer, serving for customization, flexibility and responsiveness. These key supply chain concepts undoubtedly serve for operational continuity as well as economical and financial sustainability. Consequently, the study has revealed that 3D printer technology is becoming a key enabler of sustainability in digitally-intensive contemporary SCM ecosystems.

Keywords: 3D Printers, Supply Chain, Sustainability

Paper 4: BLOCKCHAIN IN AGRI-FOOD INDUSTRY: CHERRY PRODUCT APPLICATION

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In agri-food supply chains, which have become more complex with globalization, food losses are quite high, prices increase several times from producer to consumer and food safety risks are experienced. On the other hand, consumers' concerns about food safety and quality and their demands for transparency are increasing. Blockchain Technology, which guarantees food reliability and authenticity, and which enables storage of data in an unalterable manner and allows fast tracking of all movements in the chain, has a great potential as a secure infrastructure in agri-food supply chain traceability. The main aim of this study is to explore how Blockchain Technology can be used in the agri-food supply chain and how it can help to address the issues of traceability and food safety. In the study carried out on the use of Blockchain in the cherry supply chain, the awareness of Blockchain Technology and acceptance of the impact of its use were evaluated with the semi-structured interview method with the sector representatives, and the digital investment priorities in the supply chain strategies were tried to be determined with the Analytical Hierarchy Process. By applying the Supply Chain Operations Reference (SCOR) model framework to the cherry supply chain, it has been tried to answer the question of "With what process model can Blockchain Technology be applied in the agri-food supply chain?" The analytical framework developed in this study and the findings of the study are adaptable to different sectors and different sub-sectors of agri-food supply chains.

Keywords: Agri-food Supply Chain, Blockchain Technology, Food Safety, Traceability

Paper 5: A BIBLIOMETRIC ANALYSIS ON REVERSE LOGISTICS IN E-COMMERCE

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In this study, a bibliometric analysis on reverse logistics in e-commerce was performed. The study included 90 articles published between 2002 and 2021 and indexed in Scopus. 53% of these articles were published in the field of Business, Management and Accounting. The publications were mostly made by researchers affiliated with institutions in China, which was followed by researchers affiliated with institutions in the USA and India, respectively. The most cited article was the one titled "Reverse Channel Design: The Case of Competing Retailers" published in 2006. The most frequently repeated keywords were Reverse Logistics, Logistics, and Electronic Commerce. In the study, bibliometric maps were also presented by using the VOS viewer program. We believe that this study will guide future studies on reverse logistics in e-commerce.

Keywords: Bibliometric Analysis, E-Commerce, Reverse Logistics.

Paper 6: TRUCK DEMAND FORECASTING WITH ARTIFICIAL NEURAL NETWORKS IN MEDICAL EQUIPMENT TRANSPORTATION

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Medical supplies logistics has an important sectoral position and share when evaluated within the scope of sustainable supply chain management. Delivering medical supplies to the right place on time is crucial for health. In case of a shortage of stock, there may be life-threatening dangers. For this reason, it is very important to maintain the logistics services of such materials without interruption in cases of emergencies such as war and epidemic. Risk management should be done with early planning in order not to interrupt this crucial transportation worldwide. The disruptions experienced in the Covid-19 pandemic contributed to the recognition of the deficiencies in the planning process of risk management due to difficulties and inadequacies in the procurement process. In the emergence of this study, in the event of a global epidemic that has not been encountered for many years, how the demands for medical supplies and transportation vary, will be discussed by comparing the demands of the pre-pandemic period and during the pandemic period, and what kind of demand will occur during the year in case of a recurrence of the epidemic will be estimated by artificial neural networks method. Within the scope of the research, the medical equipment import and export transportations between Germany and Turkey were taken as the basis of the medical supplies manufacturer company, which has many production facilities around the world and is a powerful supplier. As a result of the study, it is aimed to obtain data that will help risk management in the sectoral sense and to facilitate investment predictions for companies interested in the transportation process.

Keywords: Sustainable Supply Chain Management, Medical Equipment Transportation, Epidemic, Artificial Neural Networks, Demand Forecasting.

Paper 7: PARCEL LOCKER APPLICATIONS IN TURKEY

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Alternative delivery applications are gaining popularity today and parcel lockers are differentiated from the others as they offer different delivery location options to the customers. One of the biggest problems faced by courier companies today is that customers are not always available at the place of delivery during delivery times. This leads to an increase in failed deliveries that place an extra burden on last mile operations, not only in terms of cost but also in terms of environmental concerns. One of the effective methods to deal with this problem is parcel lockers. Parcel lockers and related concepts are currently used in various countries around the world, and in some countries their installation and use are supported by the government. Parcel locker use not only helps logistics companies to navigate their operations and cost but also gives the customer the power of choice. For this reason, it is considered necessary to investigate the parcel locker applications in Turkey. This paper intends to present current state of the parcel lockers in Turkey, the companies providing the service, their profile and future plans to provide beneficial knowledge to academia and industry.

Keywords: Parcel Locker, Smart Locker, Applications, Delivery locker

Paper 8: MULTIPLE PERFORMANCE MEASUREMENT MODEL (COMET) FOR THE MEASURMENT OF CONTAINER PORT PERFORMANCES GLOBALLY DURING AND BEFORE THE PANDEMIC PERIOD

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The negative effects of the pandemic crisis on the transportation sector have started to be felt globally since 2020. In this study, the "Characteristic Objects Method (COMET)" model, which is one of the multiple decision-making methods, was used in order to measure the effects of the crisis on international maritime trade and especially on the performance of container ports relative to the previous period. A single combined performance value was calculated for each period with the COMET model, which accepts the multiple performance values of container ports globally from the pre-crisis 2019 to 2020 pandemic period as inputs. The "Port Performance and Environmental Indicators" in the "Review of Maritime Transport 2020 and 2021" reports published by UNCTAD in 2020 and 2021 are based on 12 criteria used in the evaluation of container ports and the combined performance values of the said years according to these criteria. As a result of the application of the model, it was observed that there was a decrease in the combined performance of container ports on a global scale during the pandemic period (2021), compared to the pre-pandemic period (2020).

The COMET model, which has advantages over similar multiple decision-making methods such as AHP, VICOR and TOPSIS, and has been used in different areas in the logistics sector, is based on the measurement of port performances in this study. As a result of the application of the model, by using the model periodically during or after similar crises, it will be possible to monitor container port performances on a global scale relative to years. Similarly, performance values of selected ports can be calculated relative to years or to other ports. As a result, positive or negative developments regarding container ports can be monitored analytically over the years.

Keywords: Combined Port Performance Value, COMET, Container Port

PAPER 9: HOME HEALTH CARE ASSIGNMENT, SCHEDULING AND ROUTING PROBLEM: AN APPLICATION FOR A STATE HOSPITAL

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Home care services provide care to the elderly, disabled or chronically ill people in their home. These services have gained importance due to the aging of the population and the rapid increase in hospital occupancy rates in pandemic situations such as Covid-19, the cheaper home care service in many cases, and the rapid development of medical device technology and transportation systems. As a result there has been an increase in demand for home health care services. Effective use of resources has become an increasingly important issue in order to meet increasing demand. Optimization methods are useful for addressing many stages of home care services in order to meet demand. In this study a home health care assignment, scheduling and routing problem is defined considering a state hospital in Turkey. A mathematical model and a solution approach is proposed for the problem. The obtained results are compared with those prepared manually in the hospital.

Keywords: Home Health Care Scheduling and Routing Problem, Mathematical Model, Application for a State Hospital, Health Systems

Paper 10: THE IMPACT OF USING NEARSHORING ON SUSTAINABLE GLOBAL TEXTILE SUPPLY CHAIN

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The new world order, in which company interests do not conflict with social interests, and social and environmental issues become the responsibility of companies, has revealed the concept of sustainability. In this context, according to the statements of the European Parliament, sustainability is also important for the textile sector, which is one of the most environmentally harmful sectors according to the amount of production and waste. On the other hand, the textile industry has a complex supply chain in which many distant chain members try to act together under globalization and cost constraints. This situation makes the sustainability studies of the textile sector difficult. However, businesses that create a sustainable supply chain structure and continuously improve this structure are expected to create a competitive advantage. In this study, the process of determining the sustainability targets of a global garment company according to GRI standards and CSR directives is discussed. In the process, the nearshore supplier strategy is adopted to improve environmental sustainability. Therefore, a new supply chain structure has been created. In this new structure, the changes in the sustainability performance indicators of the company and the reasons for these changes are explained.

Keywords: Sustainable Textile Supply Chain, KPIs for Sustainability, Nearshoring

Paper 11: AN EVALUATION OF TRANSPORT MODEL WITH THE BERESFORD MODEL FOR INTERMODAL ROUTES BETWEEN TURKEY AND SOUTHERN AND CENTRAL EUROPEAN COUNTRIES

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International trade is a very important factor in the economic development of countries. The increasing import and export activities worldwide, have in turn added to the demand of various types of transportation. To meet the growing demand, such effective, environment-friendly, and sustainable modes of transportation as multimodal, combined and intermodal have been developed. To maximize the efficiency of these modes and the effectiveness of the transportation activity, the advantageous features of a given transportation mode and those of the transportation type must be combined. Logistics companies which try to provide better service to their customers in the increasingly competitive circumstances of international transportation market, focus on these developed alternative modes of transportation. This study provides an analysis of the alternatives of rail and road freight transport types as combined and intermodal transport modes have been evaluated which are used or will be used in the trade between Turkey and South and Central European countries. Departing from the alternative transportation modes used in this trade, the objective of this analysis is to identify the feasible transportation mode based on such variables as distance, cost, and time. For this purpose, three alternative routes are identified which are used in the railway container transportation from Turkey to South and Central European countries. To be able to pin down the optimum transportation mode in these routes, supplementary solutions are presented for the selection of the optimum mode of transportation by using Beresford's distance-cost model. In the main and based on the data extracted from the analysis of distance, cost and time regarding the selected alternative routes, this study makes recommendations for deciding the optimum mode of transportation by presenting transportation costs for each route.

Keywords: Intermodal Routes, Transportation Modes, Logistics

Paper 12: CUSTOMER EXPERIENCE MANAGEMENT IN PHARMACEUTICAL SECTOR: AN INTERVIEW STUDY

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The word of customer and its meaning has been evaluated to today's meaning since 1920s. In the beginning the word of customer is used for who buys and pays for the products. Recently this meaning has changed into the service taker for whose personal and institutional needs are afforded by companies or personal. Customer experience management is important to stay alive and competitive in any sector. Additionally in supply chains also customer experience management is great opportunity to win a piece in the sectorial pie.

The pharmaceutical industry as being the 3rd greatest sector in the world, manufactures synthetic, herbal, animal and biological chemicals used for therapeutic, protective, and diagnostic purposes in human and veterinary medicine in accordance with pharmaceutical technology. The pharmaceutical industry has also particular importance with his value-added position and is critical with his capacity in production and trade volume in the world. In the globalizing world, the pharmaceutical sector has entered into rapid growth process in recent years, with the effect of both demographic changes and increases in life expectancy and increased access to health services.

The logistics & transportations of pharmaceutical sector is very important and needs OTIF (on time in full delivery performance) results on high level which means that cost reduction in the meantime is very important for efficiency.

In this study an interview has been done with Özge Karataş (MSc) who is Business Intelligence and Customer Relations Senior Manager in pharmaceutical sector and has won a number awards in mentioned area and Olga Potaptseva who is in top 20 CX professional in the world. The questions of the interview and their experience in the sector will help us to understand importance customer relationship and experience management in pharmaceutical sector.

Keywords: Pharmaceutical Sector, Interview, Customer Relationship Management

Paper 13: DETERMINING SUPPLY CHAIN STRATEGIES BY SWOT ANALYSIS: A CASE STUDY

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Strategy is defined as activity plan to reach general purpose or aim that based long term aspects. Strategy's origin goes back to Sun Tzu and its modern meaning has gone back to 1980s. The companies give importance to develop their strategies in the sense of revival and institutional aspects in the area of to increase their profitability, to create a difference in the market, to follow up technological developments recently. According to researches it has been proved that the companies cannot adopt supply chain strategies which are inside the functional strategies to their processes. To determine supply chain strategies will provide to gain customer experience, reduce cost, create quality and to adopt innovative approach to their structure. The companies can choose one of those criteria to adopt or should use all of aspects in their supply chain strategies.

In this study a case company has been chosen which has a great importance in the sector of wood based panel industry sector that has supply chain process however no strategies or projects has been adopted to determine its supply chain strategies by using Hoshin Kanri model as main model and Balanced scorecard & Eisenhower matrix as auxiliary model. According to models top ten supply chain strategies have been determined and by using balanced scorecard and Eishower matrix, the strategies have been distinguished as middle term and long term. Afterwards middle-term strategies have been explained detailed. The roadmap has been drawn.

Keywords: SWOT Analysis, Hoshin Kanri, Balanced Scorecard

Paper 14: A MCDM MODEL PROPOSAL AND SOLUTION FOR EVALUATING AGILE METHODS USED IN SUPPLY CHAIN MANAGEMENT

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In the developing and changing world, the field of technology hosts many innovations. Supply chain management has also evolved in the light of technological developments and incorporated the concept of agility. Agile supply chain is the ability to respond quickly to unexpected changes in demand and supply. As supply chains compete in a rapidly changing and growing market, the agility of the supply chain provides a significant competitive advantage to firms. An agile supply chain has the ability to respond flexibly and quickly to demands and problems. It benefits companies by adopting the right product, the right customer, the right transportation, and the right supply system. In this study, it was aimed to evaluate the agile methods used in the supply chain management processes, and for this purpose, a multi-criteria model consisting of 12 criteria and 9 alternatives was proposed. This proposed model was solved with two-stage multi-criteria solution techniques, and in the first stage of the solution, criterion weights were calculated with the SWARA method, while the evaluation and ranking of alternative agile methods were carried out with the WASPAS method. The application results are presented in the study, so that the most appropriate agile method methodology to be used in supply chain management was determined.

Keywords: Supply Chain Management, Agile Management, Agile Supply Chain, SWARA, WASPAS.

Paper 15: IDENTIFYING AND ANALYZING THE RISK FACTORS OF SUSTAINABLE SUPPLY CHAIN MANAGEMENT IN TEXTILE SECTOR

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Sustainable supply chain management is a management process that combines economic, social and environmental contribution and foresees making certain decisions and planning at every stage of the supply chain line. With the understanding of sustainable management style, companies keep environmental traceability in the foreground, provide necessary regulations, take important steps in social environment cooperation and achieve economic efficiency while doing all these. In addition to the economic investments required to make their supply chains more effective with a developing sustainability understanding, companies should also consider the risks that environmental and social factors may bring, taking into account the level of uncertainty in the future and their decisions. While the risk factor is accepted as the uncertainty associated with the occurrence of any event; on the other hand, risk management is strategically important in the planning of contingencies. Risk management in the supply chain is effective in identifying and analyzing risk factors in the economic and production cycle and in producing proactive solutions against risks. With the effect of the rapidly increasing population of the world, there is a significant increase in textile consumption. In this study, for risk assessment in sustainable supply chain management for the textile sector; covered under the main headings of supply, production, distribution, customer, reverse logistics and within the framework of economic, social and environmental subheadings. Potential risks are determined by reviewing the literature and taking opinions from textile sector employees. As a result of the study, it is aimed to develop a comprehensive framework for Sustainable Supply Chain Risk Management (SSCRM). Important strategies such as the ability to transform textile wastes into the raw materials of value-added products with appropriate technologies, which are included in the sustainability of textiles, are presented.

Keywords: Sustainable Supply Chain Risk Management, Risk Management, Risk Factors, Sustainable Supply Chain Management, FMEA

Paper 16: UNDERSTANDING LAST MILE LOGISTICS IN THE AGE OF MICRO-MOBILITY: A REVIEW

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This paper aims to reveal critical factors, challenges and innovations in the extant last-mile logistics literature and accordingly provide future research directions. The review is based on 105 papers published between 2010-2022 in international peer-reviewed journals and proceedings of conferences from scientific databases and search engines. Last mile represents the final leg of supply chain logistics activities, hence it includes different optimization constraints such as cost reduction, air pollution and sustainability from logistics service provider's side, as well as from the final customer's side. There is a huge increase in last-mile innovations such as autonomous delivery vehicles, mobile warehousing, crowdsourcing solutions to match customers' needs and company's financial and sustainability constraints. This review provides insights to both researchers and managers. On the research side, it analyzes and categorizes extant literature about customer-focused, sustainability and efficiency-oriented last mile logistics solutions, suggesting future research areas. On the managerial side, it offers a framework of the main factors affecting last-mile applications and also feasible new solutions that may be applied to increase efficiency, sustainability and customer satisfaction.

Keywords: Last-mile Logistics, Delivery, Innovations, Sustainability

Paper 17: A STUDY ON CRITICAL FACTORS OF DIGITALIZATION IN REVERSE LOGISTICS

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Reverse logistics or closed loop supply chains play a critical role in todays' business environment in order to achieve sustainable practices that include environmentally, socially and economic considerations. Reverse logistics covers the collection of end-of-life phased products from end users, and continue with recovery processes i.e. reuse, remanufacturing, recycling, refurbishment, and disposal. These activities have significant impacts on environmental and social issues as well as economic conditions of the company. Therefore, closed loop structures become essential for organizations, and reverse logistics becomes an indisputable element of the supply chains. Rapid digitalization in industry, so called Industry 4.0 or digital era, can be seen as a great opportunity to support and improve reverse logistics operations to contribute sustainability. Although, the relationship between sustainable practices and digital operations received the attention of both practitioners and academicians, the current literature lacks in providing factors that directly covers digitalization implementations in reverse logistics activities. From this point of view, this study, firstly, aims to propose critical factors for digitalization in reverse logistics, and secondly evaluate them to make a prioritization for practical implementations. To achieve these aims, initially a literature review will be conducted to propose critical factors that are supported by the literature. Secondly, Fuzzy-Entropy Weighting Method is going to be used to prioritize these factors and to reveal the most important concepts. At the end of the study, it is expected to contribute the literature by providing new concepts and suggesting future research ideas based on the results.

Key Words: Reverse Logistics, Sustainability, Digitalization, Fuzzy-Entropy Weighting Method

Paper 18: THE IMPACT OF FOLDABLE CONTAINERS ON SAVING CONTAINERSHIP BUNKER COSTS

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This study investigates whether foldable containers potentially save bunker costs for containerships in addition to reducing the cost of empty container repositioning. Using a minimum-cost multi-commodity network flow problem, we optimize the overall empty container flow in a multi-port shipping-service network. Each optimization solution for container flow is analyzed to determine the handling time at ports and sailing speed, resulting in ship bunker costs. We found through numerical experiments that foldable containers can reduce not only the cost of empty container repositioning but also the handling time of empty containers at ports, consequently saving ship bunker costs in comparison to standard containers.

Key Words: Container Transportation; Liner Shipping; Empty Container; Foldable Container; Bunker Cost; Slow Steaming

Paper 19: EXPERIENCES OF TRUCK DRIVERS IN INTERNATIONAL ROAD TRANSPORT: A QUALITATIVE STUDY

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International road transport plays a critical role in many supply chains because of its volume and importance in logistics processes. Internationally, road transport serves alone or integrated with the sea, rail, and air transport modes. In recent years, the shortage of drivers has been one problem preventing international road transport from efficient operations. As in many countries of the world, there is a problem of driver shortage in Turkey, which has been increasing gradually. Therefore, this study aims to discover the experiences of truck drivers, reveal the advantages and disadvantages of being an international road truck driver, and make suggestions for improving the occupation. The research design is phenomenology, and the sampling technique is purposive sampling. The number of participants consists of 10 international road transport drivers. Data was collected with semi-structured interviews and analyzed with thematic analysis. The findings show that the advantages of being truck drivers are high salary, love of the job, employee autonomy, improved job conditions, and visiting new places. Disadvantages are loss of family life, social isolation, long waiting time at the borders, and poor eating conditions. Finally, suggestions are an increase in retirement wage, a decrease in retirement age, training programs for job entrance, regulations for borders waiting, and improved standards for facilities. The study results are expected to provide insight into the state of truck drivers to industry and government authorities.

Keywords: Drivers' Experience, Driver Shortage, International Road Transport, Truck Drivers

Paper 20: IMPROVING INVENTORY MANAGEMENT OF A LOCAL PHARMACY USING ARENA SIMULATION

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The traditional economic model, “take-use-dispose,” resulted in the global generation of 2.24 billion tons of solid waste in 2020. The large amount of solid waste accompanied by the fast depletion of natural resources show that this model is not sustainable. Thus, a shift occurred toward a more sustainable economic model, circular economy (CE), which treats waste as raw material and uses it continuously to produce new products and materials. With the growing environmental awareness, economic reasons, and legislations, in various industries such as pharmaceutical, electrical, and electronic equipment, and automotive, CE and related activities started to be adopted. Pharmaceutical is one of the largest industries in the world, with a global market value of 1.27 trillion U.S. dollars (2020). The pharmaceutical supply chain’s (PSC) primary goal is to meet the patients’ demands with a high customer service level (CSL). Thus, the members of PSC tend to hold excess amounts of inventory. However, as they are perishable, medicines may expire in pharmacies or warehouses, which can have severe consequences like the sale of outdated medications and the additional costs generated. Efficient inventory management that provides high CSL with minimum cost and waste possible is one of the challenging problems in a PSC. This study focuses on one of PSC’s most important tactical decisions, inventory planning. Using real data, a simulation model of a local pharmacy is developed. Then, the optimization tool of Arena, OptQuest, is used to determine the optimal inventory policy parameters that give the minimum average total cost. The simulation results showed that the average total cost decreases by approximately 13% when the optimized parameters are used.

Keywords: Arena Simulation, Circular Economy, Inventory Management, Pharmaceutical Supply Chain, Waste Management

Paper 21: EXAMINATION OF SUPPLY CHAIN RISK MANAGEMENT IN TERMS OF SUSTAINABILITY

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Supply chains contain many risks related to information and material flows from the first supplier to the last customer due to their highly complex structure. Therefore, supply chain risk management(SCRM) has an increasing interest both by researchers and managers. Since there is a complex flow network between the components of a supply chains, a change that may occur at any point of this flow network has the potential to affect the entire supply chain. Therefore, transformation of a supply chains into a sustainable structure requires all links in the network to adopt sustainable strategies with a sustainability approach. In this study, a comprehensive literature review on supply chain risk management and sustainability is conducted. In this context, the studies carried out between 2002-2022 are examined in order to reveal the conceptual framework of SCRM. This study, in most general terms, allows the conceptual framework of SCRM to be handled with all its aspects, and the trends and innovations in this subject have been tried to be discovered.

Keywords: Supply Chain, Supply Chain Risk Management, Sustainability

Paper 22: IDENTIFYING THE SUCCESS FACTORS OF E-LOGISTICS IN TURKEY: AN APPLICATION OF ANALYTIC HIERARCHY PROCESS (AHP)

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With the rapid development of information technologies, businesses have addressed to new applications in their operations. Such developments have caused a significant change in the logistics sector. Nowadays, almost all activities are carried out in the digital environment through emerging technologies. In parallel to this, especially in the last few decades, e-logistics have become quite popular for both local and global enterprises. E-logistics can be described as the application of new technologies to traditional logistics activities. Currently, there are many small and medium-sized logistics enterprises in Turkey. Therefore, it is important to reveal the success factors affecting e-logistics. The main objective of this study to identify the success factors which are crucial for sustaining e-logistics activities. Firstly, a comprehensive literature review was conducted, and then expert opinion was taken to be able to determine criteria. By the help of feedback and literature review, five criteria were investigated within the scope of this study. The AHP method which is widely used in multi-criteria decision-making techniques was applied to evaluating success factors in e-logistics. As a result of AHP, best success factors were determined and ranked.

Keywords: E-Logistics, Multi-criteria Decision-making Techniques, AHP Method, Turkey

Paper 23: POSSIBILITIES AND LIMITS OF DIGITALIZATION TO INCREASE SUPPLY CHAIN RESILIENCE

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In case any unexpected circumstances occur, a supply chain may be heavily influenced with a wide range of negative consequences such as inability to deliver or large delays in delivery. Therefore, it is important for every supply chain and the companies that are involved in them to reduce these negative outcomes. The term Supply Chain Resilience (SCR) stands for the level of adaptability of supply chains to respond to and recover from disruptions. A high SCR is given if re-maintaining operational continuity is quickly possible. As an example of unexpected disruptions, the COVID19-crisis showed major impacts on the functionality of global supply chains, as several surveys among supply chain managers show. The upcoming technologies of the industrial digitization, mainly known as Industry 4.0, may provide opportunities to increase SCR in the future. In the article, based on a structured literature review of recent papers published after beginning of the COVID19-crises, first an overview of different surveys is given to show the COVID19-impact on global supply chains and therefore prove the need to generally increase SCR. Second, an insight of how especially Digitalization / Industry 4.0 may help to increase SCR is given, including the strategic implementation of all digitalization activities in supply chain management. Especially improving the supply chain overview for all partners, faster and more precise scenario calculation and decision-making processes as well as the implementation of accurate data bases by using Artificial Intelligence are described in more detail. Besides the positive chances of using Digitization / Industry 4.0 to increase SCR, major challenges are addressed as well.

Keywords: Supply Chain Resilience, Industry 4.0, Digitalization

Paper 24: LOGISTICS CENTERS FOR SUSTAINABLE AND SMART LOGISTICS MOBILITY: LITERATURE SURVEY

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The competition conditions and profitability challenges that have arisen in recent years necessitate several new studies. Synergy collaborations and digitalization efforts are the most important ones of those. Logistics centers, also known as freight centers, are areas where synergy is provided at a high level. In these regions, many resources and infrastructure elements that countries and companies will need come together for sustainable logistics mobility. In these regions, where integration is achieved in terms of both exports, imports and transit trade, the processes become easier for companies, and access to various resources is provided quickly and effectively. Sustainable and smart mobility systems make these centers even more important and valuable. Especially with the covid pandemic period in the 2020-2022 period, the existence of these types of structures has become more important. In this study, a literature research study was conducted on logistics centers in terms of sustainable and smart mobility. Publications in the period of 2019-2022 were reviewed via YÖK Thesis Center, Web of Science and Google Scholar. In this context; the author, subject, source, purpose of the study, research method and recommendations for future studies are listed systematically.

Keywords: Logistics Centers, Sustainable and Smart Mobility, Literature Survey

Paper 25: AN EXACT SOLUTION FOR REAL-LIFE TRANSSHIPMENT PATH PROBLEM

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In the field of industrial engineering, transportation planning, vehicle routing problem, warehousing, inventory management, and customer service are logistics problems. Graph theory algorithms provide solutions to logistics problems such as the shortest path problem, the minimum spanning tree problem, and the vehicle routing problem.

In a logistics company system with branches and transfer centers to which the branches are affiliated, if the sorting process is carried out in the transfer centers, the deliveries collected from the branches must be transported to a transfer center. Thus, there are situations where a delivery is transferred in the form of the sending branch, the sending transfer center, the receiving transfer center and the receiving branch, respectively. In this flow, transferring with a single transfer center without visiting two transfer centers reduces the total cost. While moving from the sender transfer center to the receiver transfer center, stopping by some branches on the way allows to complete the transfer process with a single transfer center and eliminates the necessity of leaving the vehicle from the receiver transfer center to these branches again. Thus, the number of vehicles that need to go from the receiver transfer center to the branches is reduced. The mentioned logistics structure is defined as a graph that is considered as a network design problem. Given the sender transfer center S, the receiver transfer center T, the set of branches A connected to S, and the set of branches C that are not connected to S or T, a counting algorithm that gives the minimum value route among all combinations is designed in order to find the optimal route from source nodes $s \in A \cup \{S\}$, to target node $t = T$.

The algorithm has been tested in Python and Gams by changing the number of elements of the set of A and the set of C and the results are given.

Keywords: Graph Theory, Logistics, Network Design Problem, Combinatory Problem

Paper 26: A MATHEMATICAL MODEL FOR MULTIOBJECTIVE CARGO ROUTING PROBLEM WITH BALANCE CONSIDERATIONS

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The importance of logistics has grown in alongside with globalization and the widespread use of e-commerce. As a result, the number of cargo transport companies increased and logistics improvement became a priority. Companies conduct transportation process analyses in order to gain a competitive advantage and reduce cargo handling and transportation costs. Cargo handling consists of multiple processes. These processes include cargo receiving, collection, processing, dispatching, distribution and shipment delivery. The collection procedure is comprised of the daily collection of shipments from the cargo branch offices and their delivery to the Transfer Centers. Shipments are dispatched according to their destination once they have been processed at the Transfer Centers. In the distribution phase, a certain area is given to each employee and the shipments belonging to this area are delivered according to the shipping addresses received that day. Although the distribution process can change the departure times and routes to the branches, the collection process does not. This study considers the collection process of the cargo routing problem. Multiple vehicles are used in the collection process and they use same routes every day. Even though the vehicles' loads fluctuate on a daily basis, they return to the Transfer Center with approximate amounts. There are considerable variations in route lengths, vehicle load quantities, and travel times for these vehicles, and a need for balance has been observed. This study aims to minimize total route lengths while minimizing the vehicle load fluctuations and differences in route travel times. The problem handled as Multi-Objective Vehicle Routing Problem with Balance Considerations(MO-VRP-BC). As a first step, we developed a mixed integer linear programming formulation for the MO-VRP-BC. A computational study was conducted using data from one of Turkey’s largest cargo companies. The results showed that using the developed formulation resulted in promising improvements in objectives.

Keywords: Logistics, Transfer Centers, Cargo, Routing Problems

Paper 27: A MODEL PROPOSAL IN GREEN SUPPLY CHAIN MANAGEMENT: THE CASE OF TURKEY

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Some important developments such as the difficulty of competitive conditions, rapid development of technology, globalization and the increase in the complexity of networks in the supply chain require businesses to reconsider their supply chain strategies. These developments have started to necessitate the transition from classical supply chain management to green supply chain management. The green supply chain, which is a new paradigm, increases the efficiency of the enterprises in the chain by minimizing the damage to the environment. Based on this point of view, in this study, a model hybridized with a genetic algorithm is proposed to test the energy efficiency of turbines. For this reason, a dataset containing 36733samples of 11 sensor measurements collected for one hour (by means of mean or total) from a gas turbine located in the northwest region of Turkey was used. Thus, the classification study of the tribunes was carried out.

Keywords: Green Supply Chain Management, Gas Emission, Genetic Algorithm, Classification

Paper 28: ELECTRONIC WASTE FORECASTING WITH DEEP TRANSFER LEARNING

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With the development of technology and changes in trends, a wide variety of electrical and electronic products are developed and offered to the users. These products become obsolescent rapidly leading to increases in the product consumption and electronic waste (e-waste) generation. For this reason, recycling, decomposition, and disposal of e-waste become a vital issue for a sustainable environment. Motivated by this, we address e-waste forecasting problem in this study. There is lack of sufficient data in this field, so we adopt transfer learning, which aims to improve the performance of a learner by transferring knowledge from source domains to target domains. The sales of electronic products (TV, technological equipment, etc.) and e-waste of the European Union countries are taken as source and target domains, respectively. In this context, a deep learning model is first trained with sales data of electronic products. Then, in order to predict e-waste amounts, transfer learning is performed to the pre-trained deep learning model, and a deep transfer learning model is proposed. Experimental results show the effectiveness and efficiency of the proposed deep transfer learning approach in e-waste forecasting. The proposed e-waste forecasting approach can be used as input for managing reverse supply chain activities.

Keywords: E-waste, Forecasting, Transfer Learning, Deep Learning, Sustainability

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Paper 29: SUPPLY CHAINS FOR VALORIZATION OF OLIVE GROVE RESIDUES AND OLIVE OIL INDUSTRY BY-PRODUCTS: A REVIEW ON RESEARCH AND LITERATURE ON OLIVE BASED BIOECONOMY

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Bio-economy, which is based on the replacement of materials and energy production based on fossil resources with biomaterials and/or biofuels or energy generation from biomass resources, has an important place in the circular economy. Bioenergy, being a crucial element for bio-economy, both serves the circular economy principles and energy transformation based on renewable energy, promotes de-carbonization and provides us the ability to supply cheap and clean energy sources considering supply security and geopolitical developments. Valorization of biomass as a source of energy has challenges due to the large variety of biomass feedstocks and conversion technologies. The development of optimized biomass value chains is essential to tackle these challenges and to set up a successful bioenergy market,

The residual biomass produced in the olive sector is the result of the large quantity of olive groves and olive oil manufacturers that generate byproducts with a potentially high energy content. Until now, the disposal and management of pruning residues and olive oil by-products has generally represented disposal problems which lead to environmental problems rather than opportunities for additional revenue. Olive oil production, conservation of the environment and energy generation should be more interrelated while planning future scenarios for the olive oil industry.

In this context, this study aims to define a roadmap for studies in Turkey to untap the potential of olive crop and olive oil industry generating several residues, i.e., olive tree pruning, olive leaves, olive stones, crude olive husk and extracted olive pomace that could be used to produce high-added value products in an integrated bio-refinery or in a bioenergy power plant. Paper presents a review on recent research on the valorization of olive by-products in line with the circular economy principles and the bio-economy strategy and presents the literature which applies to design and management of waste biomass supply chains. Main objective is to provide a conceptual framework for developing and deploying an effective bio-economy utilizing olive pruning and olive oil industry byproducts conducting a preliminary review of the olive oil chain residues in Europe and Turkey comparatively, assessment of technical potentials, biomass supply costs and allocation of biomass collection sites and energy production facilities with different supply chain scenarios.

Keywords: Circular Economy, Bio-economy, Bioenergy, Biomass Supply Chains, Olive Grove Residues, Olive Pruning, Olive Oil Industry By-products, Olive Pomace

Paper 30: SUSTAINABLE VEHICLE ALLOCATION DECISIONS IN FTL TRANSPORTATION ENVIRONMENTS: A CO-OPETITION SYSTEM PROPOSAL

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Full truckload (FTL) transportation operations are carried out in many businesses, particularly those dealing with large amounts of loads to be carried, for instance, from farms, docks, mines etc. to factories or from factories or facilities to warehouses. Transportation companies can usually represent their FTL transportation operations as Vehicle Allocation Problems, due to the nature of the demands: since the truck is fully loaded and does not have any room for another load to be picked up from another node, demands are in form of direct shipment from a departure node to a destination node within a network of nodes and arcs. The nature of demand also causes several empty travels: if there is no demand with a departure node same as the destination point of a carried load, the truck needs to make an empty travel towards the departure node of another demand. Companies usually try to overcome this problem by seeking for a demand on the arc of the empty-planned travel in their network (possibly with discounted prices) or by rejecting the successor demand/shipment if the cost of the empty travel exceeds the value of the shipment. Due to the fact that there usually are many companies operating in the same region or country, each having their own customer network/demands, a collaboration between these competitors does not necessarily harm the competition, but has potential to improve the profitability of each company, and contribute to the sustainability performance of the operations in the overall system. This presentation demonstrates a possible application of collaboration among competitors (co-opetition) in a FTL transportation system. An existing Mixed Integer Linear Programming model from the literature is employed to optimize the company-wise and system-wise vehicle allocation decisions. Using the model, a numerical analysis is conducted in a three-company, eight-node and five-period problem to compare (i) no collaboration, (ii) partial collaboration (co-opetition) with sharing excess (unaccepted) demands and empty travels, and (iii) full collaboration policies in a demonstrative problem setting with hypothetical data. For the analyses, total profit, total number of empty travels and total number of rejected demands are observed for each policy as key performance indicators regarding economic, environmental and social sustainability performance measures, respectively. It is observed in resultant values that, compared to the no collaboration case, total profit increases by %9.2 and %29 in co-opetition and full collaboration cases respectively. Similarly, number of empty travels decreases by %35 and %65, and number of rejected demands decreases by %6 and %11 in co-opetition and full collaboration cases respectively. The results encourages further research and investments in developing potential ways/systems for the competitors to collaborate in FTL transportation environments.

Keywords: Full Truckload Transportation, Vehicle Allocation Problems, Co-opetition, Sustainability.

Paper 31: ARTIFICIAL INTELLIGENCE FOR SUSTAINABLE SUPPLY CHAINS

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Social sustainability in supply chains has become a widely discussed issue in recent years following factory disasters in low cost countries, costing thousands of lives. In recent years, a number of countries have passed legislation to force buying companies to prove that their supply chains are (socially) sustainable. The German Supply Chain Act will come into force in 2023, so far the strictest and most comprehensive law of this kind. Proving social sustainability of supply chains is a major challenge for buying companies, however. Especially in low-wage countries, it is difficult to check all companies involved for sustainability. This paper addresses this problem by assessing to which extent Artificial Intelligence (AI) can help improve and demonstrate social sustainability in multi-level supply chains. Artificial Intelligence in this context could be sensing and interacting solutions, learning systems or decision-making solutions. In the paper we present the results of a systematicliteraturereviewonsocialsustainabilitybarriersinsupplychains.It appears that financial barriers, institutional barriers, the use of sub suppliers and audits are the main obstacles to social sustainability. We further use a reference model of the procurement process to assess which type of artificial Intelligence may help in which part of the process to demonstrate or improve social sustainability in the supply chain and help overcome the barriers mentioned before. It is shown that a variety of AI applications may contribute to more socially sustainable procurement. In particular, AI applications can support in supplier selection, supplier monitoring, contracting and cost analysis for sustainability. However, AI will not be able to fully ensure compliance with the social sustainability legislation.

Keywords: Artificial Intelligence, Sustainability, Supply Chain

Paper 32: EUROPEAN GREEN DEAL FOR A SUSTAINABLE GLOBAL TRADE: COMPARING EU COUNTRIES AND TURKIYE

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Rapid changes in international trade volumes and transportation systems, undoubtedly, have a remarkable role in increasing greenhouse gas emissions in the world. The European Commission, presenting the European Green Deal in 2019, underlined this crucial problem and started a set of policies related to climate, energy, taxation, and transport with an aim of zero greenhouse gas emissions by 2050. As a member of the Customs Union, Turkiye started the transition to the European Green Deal with an action plan including actions concerning border carbon regulations and sustainable smart transport. This study focuses on Turkiye's position by comparing Turkiye and EU countries within the framework of the European Green Deal by using K-means cluster analysis. Secondary data on GDP per capita, population, greenhouse gas emissions, export and import volumes, environmental taxes, and environmental protection expenditures of Turkiye and EU countries are used to find out the Turkiye's cluster and place among other countries. Findings are considered to contribute trade policy makers and future scientific papers.

Keywords: European Green Deal, Sustainability, International Trade, Greenhouse Gas Emissions

Paper 33: FASHION INDUSTRY'S PRODUCTION AND SUPPLY CHAIN STANDARDS ON THE PATH TO COMPLIANCE WITH THE HUMAN RIGHT OF ACCESS TO A CLEAN, HEALTHY, AND SUSTAINABLE ENVIRONMENT

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On July 28th, 2022, the United Nations' general assembly adopted last year's Human Rights Council resolution of access to a clean, healthy, and sustainable environment as a universal human right. Although to what extent countries will see themselves obliged to comply with the resolution is widely discussed, some statutory efforts in this direction had already been initiated in different member states or entities before the resolution was in effect. Examples are Germany's Act on Corporate Due Diligence in Supply Chains as well as a similar draft in France or the proposal for a directive on corporate sustainability due diligence by the European Commission. Management of any internationally operating business should not only be aware of such developments but furthermore act accordingly in order to comply with the resolution. Especially, in supply chain management this can bear many challenges, for example in sourcing materials, managing production sites or when choosing appropriate transportation options. Originators of poisonous or toxic environments are often not the same as the sufferers. This is especially true for the fashion industry. Countries where most of the apparel is produced are not home to the clothing companies nor respectively their customers. However, as those countries are severely economically dependent on their exports, gaining acceptance of more advanced production standards or acceleration of improvements can be a challenge. Still, several companies in the industry have been seeking to improve their production and supply chain standards in recent years due to a shift in consumer expectations, amongst other reasons, and also succeeded in doing so. In this paper, based on a structured literature review, an analysis of the fashion industry's current performance in terms of its environmental impact will be presented. Some companies have already successfully changed their business model towards more sustainable production and supply chain models. Measurements taken by them will be presented as an overview. Furthermore, the author will introduce a method for assessing the degree of compliance of these measurements with the recently added human right as mentioned above. This might serve other companies in the industry as an orientation for improvement.

Keywords: Covid-19, UAV, Machine Learning, Infection Risk Assessment, Mask Detection, Fuzzy Inference System, Python

Paper 34: FUZZY INFERENCE DESIGN AND MACHINE LEARNING APPROACH FOR UAV IMAGE: CASE OF VIRUS CONTAMINATION

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Due to the Covid-19 pandemic, the use of masks was supported all over the world to prevent the spread of the virus, and wearing a mask was made mandatory in most environments. Accordingly, many studies have analyzed that wearing a mask reduces the risk of transmission and the increase in air temperature reduces the number of individuals diagnosed with Covid-19. In this study, it is aimed to develop a technology suitable for Covid-19 contamination control in daily use and to reduce the transmission of Covid-19 among individuals in a social environment, based on the findings in the researches. In this context, an Unmanned Aerial Vehicle (UAV) capable of acquiring camera and environment data was used to increase mobility. In order to control the mask use of individuals, a Binary Classification model was created in the Python environment to determine whether individuals are masked or unmasked with a ratio, using the Tensor flow library and a dataset created from mask-labeled photographs. The labeling in the photographs was first made by detecting the mask in the photograph with the Media pipe library, and then replacing the faulty ones with the control. After that, the images taken from the UAV and processed in the Open CV library are calculated in the trained machine learning model and a mask wearing rate is returned as a result. This ratio and the ambient temperature data from the UAV are associated with the rules written in the fuzzy inference system, which is the main contribution of the study. This association was made with the Mamdani method, as it is interpretable and rule-based. Mamdani method function was then integrated into the Python environment and Membership functions were calculated. The data of the design was checked at different mask set positions. With all these calculations, the "Risky" and "Risk-Free" statuses of the environment were determined and the environment risk was evaluated. The main contribution of the paper is to evaluate the environment risk according to the rules written in the fuzzy inference system, mask usage information and temperature level.

Keywords: Covid-19, UAV, Machine Learning, Infection Risk Assessment, Mask Detection, Fuzzy Inference System, Python

Paper 35: DETERMINATION OF THE MOST APPROPRIATE DEBRIS DUMPING AREA WITH THE INTEGRATED ANP-TOPSIS METHOD: A CASE OF ANKARA

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After a disaster in Turkey, designated areas are needed to dump the remains of structures that are heavily damaged, collapsed or unusable and goods. Considering the debris created after disasters, the need for debris management arises. In this study, debris management is discussed within the concept of green disaster logistics. Disaster logistics activities, which can take quick action and are event-based, are very important in order to minimize the possible damages that may occur as a result of the disasters and to prevent the losses and damages. In addition, disaster logistics activities can negatively affect the environment as locally and globally. In order to make the effects of these logistics activities positive, green disaster logistics is discussed in the study. Green disaster logistics includes measures and sustainable policies to minimize the impact of logistics activities carried out in disaster processes on the environment and to keep environmental efficiency in balance. In this context, in the present study, it is aimed to determine the most suitable place as the debris dumping areas for the province of Ankara. For this purpose, first of all, criteria that can be effective in determining the debris dump area were established with a comprehensive literature search. In the second stage, the weights of the criteria were determined by the ANP method. In the last stage, the debris dump areas for the province of Ankara were ranked in terms of logistics performance with the TOPSIS method. According to the results, the most important criterion is public health and safety. In addition, the district with the highest performance as a debris dump area was determined as Etimesgut.

Keywords: ANP, Debris Damping Area, Green Disaster Logistics, TOPSIS

Paper 36: A 2-PHASE APPROACH FOR OPTIMIZATION OF THE VEHICLE ROUTING PROBLEM WITH SIMULTANEOUS HOME DELIVERY AND SELF-PICKUP

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A novel strategy called the usage of pick-up points has recently been observed in order to increase the effectiveness of last-mile delivery. In last mile delivery and routing strategies, deciding which places to employ as collection points and optimizing the route are crucial concerns.

In this research, a two-phase interdependent methodology is adopted for making decisions, first determining the value of the proposed locations through a new hybrid multi-criteria decision-making (MCDM) method. Then a novel optimization problem is formulated mathematically for the vehicle routing problem with pick-up points. Customers could select two kinds of delivery options, which increases the flexibility and efficiency of the system and customer satisfaction. The company can select the optimal location for parcel delivery to each customer based on their choices. The target of the proposed mixed integer programming is to minimize the transportation cost and increase customer satisfaction. Finally, some experiments are used to analyze the proposed model's performance and explore the benefits of using pick-up points.

Keywords: Multi-criteria Decision-making, Vehicle Routing Problem, Self-Pickup, Mathematical Programming, Pickup Points

Paper 37: HUB AND DISTRIBUTION CENTER LOCATION FOR A THIRD-PARTY LOGISTICS SERVICE PROVIDER: A CASE STUDY AT TEHRAN

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The rapid growth of the transportation industry and the advance of the e-commerce market have opened opportunities for boom delivery services companies. Although, intense competition between shipping companies has obliged many to amend their current shipment networks. In this setting, we aim to provide high-quality shipping services for a third-party logistics company in Iran. Currently, in the selected company, only one hub is in the west part of Tehran that gives services to all customers. There are some difficulties in shipping services to the eastern part of Tehran city. Therefore, in this paper, we find the location of another hub center to streamline the shipping process. Moreover, to promote our service levels, some Distribution Centers (DCs) are going to be set up. Due to the lack of shipment data like pickup and delivery data, we tried to find the locations of the hub and the DCs based on Tehran population's data. We clustered 122 regions of Tehran based on population, economic index, accessibility to the internet, and the number of business units. Since some remote regions (which are not in the same vicinity) belong to the same cluster, we defined a relative distance criterion to avoid making remote regions in the same cluster. In each cluster, a fixed or movable DC can be set up to service the regions of its cluster. Moreover, to find the best candidate locations for the hub, each zone of Tehran was assessed based on some criteria like land cost, accessibility to the highways, and distance to its nearest bus terminal. Based on these criteria, some zones have been dominated by others, and the remains were considered as candidate locations in a hub location model. By considering the DCs as spokes in a hub and spoke model, the optimal location for the eastern hub establishment was determined.

Keywords: Hub Location, Distribution Center Location, Geographical Clustering, Demand Prediction

Paper 38: DECARBONIZING LOGISTICS AS NATIONAL POLICY: TIMBER FRAMEWORK ANALYSIS OF TURKEY

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Environmental scanning is an integral part of strategic management literature for decades. Similar to PESTEL analysis, external factors influencing the level of carbon emissions from a company's or country's logistics system are analyzed using a six-category framework called TIMBER: technology, infrastructure, market, behavior, energy, regulation. Contrary to firm-level, industry and global analyses, the majority of public policy initiatives on climate change are devised and implemented at national-level. The TIMBER framework – first developed by Kuehne Logistics University - broadens the perspective of decarbonizing logistics and enable both leaders and policy makers to comprehend that macro-level trends are beyond control of organizations. Consequently, Turkey has the capabilities in planning and implementing public policies with appropriate trade-off among carbon abatement potential and ease of implementation while fostering national competitiveness.

Keywords: Decarbonizing**,** TIMBER framework Analysis, Logistics

Paper 39: EVALUATION OF PORTS BY ANP-BOCR METHOD IN TERMS OF GREEN PORT POTENTIAL

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The aim of the study is to evaluate the potential of the ports operating in Turkey to be green ports. In this context, firstly, a comprehensive literature research was carried out, and then the criteria affecting the green port performance were determined in line with the expert opinions. According to the 2020 sector report data, the alternatives of the study are the ports that do not have a green port certificate within the scope of the port authorities with the highest container (TEU) handling on a regional basis. According to the proposed approach, the weights of the criteria and ranking of the alternatives were determined by using the ANP-BOCR method, which is a Multi-Criteria Decision Making (MCDM) approach. According to the findings, the criterion with the highest weight was determined as reducing air pollution (0.049). The criteria with the lowest weight were determined as not making penalty pricing in port fees (0.015) and using cold ironing and ship speed reduction technology (0.015). Mersin International Port (0.055) has been shown to be the alternative with the highest weight.

Keywords: ANP-BOCR, Eco Port, Green Port

Paper 40: WEAPONS ORGANIZED INDUSTRIAL ZONE LOCATION SELECTION FOR TR90 REGION WITH AN INTEGRATED MULTI-CRITERIA DECISION-MAKING APPROACH

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The main purpose of the study is to determine the most appropriate on the weapon organized industrial zone location for the TR90 region with an integrated multi-criteria decision-making approach. First of all the relevant literature was examined in detail and the leading criteria used in site selection were obtained. Then, alternatives were selected as the provinces in the TR90 Region (Trabzon, Artvin, Giresun, Gümüşhane, Ordu and Rize). The FUCOM method was used to calculate the criteria weights, and the VIKOR method was preferred considering its advantages in ordering the alternatives. According to results of the study, while the most important main criterion was determined as cost, socio-economic factors were the least important. Among the sub-criteria, it was concluded that the most important sub-criteria was land costs, while the lowest important sub-criterion was the effects on disaster logistics. It has been determined that Trabzon is the most suitable city among the alternatives listed with VIKOR.

Keywords: FUCOM, Organized Industrial Zones, Defense Industry, VIKOR

Paper 41: Prioritizing Vulnerability Factors of Food Supply Chains by Fermatean Fuzzy Analytical Hierarchy Process

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Companies are trying to continue their activities by developing strategies with the intensification of increasing competition with globalization. Although these strategies, which are developed to survive in a competitive environment between companies, offer significant advantages, they also bring some risks. At this point, companies should perform risk management more carefully and comprehensively. When planning risk management, companies should develop a detailed plan considering not only themselves but also all stakeholders of the supply chain in which they are involved. The COVID-19 outbreak has caused disruptions, breaks, and interruptions in the supply chains, which are the backbone of industry and commerce. The global pandemic is also considered as an economic crisis at the global level because it causes many problems such as quarantines, breaks in supply chains, blockages in logistics channels, contractions in production, supply and demand imbalances, and shocks, closure of borders, and bankruptcy of some businesses. However, this unexpected situation has increased the importance of the weakness and vulnerability of the supply chain structure. Especially in food supply chain, with rising food prices and depletion of limited resources in recent years, there is a potential food shortage. In this context, the vulnerability of global food supply chains has reached the highest level with the closure measures implemented by governments during the COVID-19 outbreak. With the COVID-19 pandemic, significant disruptions have also emerged in food supply chains, and it has been observed that the risk management strategies currently used are insufficient to analyze the breaks in the chains. In this study, the causes of the disruptions in global food supply chains caused by the COVID-19 epidemic and the measures taken to combat the epidemic were investigated. In this context, the aim of this study is to determine factors related to the vulnerability of the food supply chain and to determine the level of importance of these factors by making a specific supply chain vulnerability analysis for the pandemic. For this purpose, factors are determined by literature research and expert opinions, and the importance of each factor is determined by using the fermatean fuzzy analytical hierarchy process.

Keywords: Food Supply Chain, Vulnerability analysis, AHP, Fermatean fuzzy numbers

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