
ABSTRACTS

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TRADE OF RETURN PACKAGING IN THE PROCESS OF DELIVERY OF RAW MATERIALS ON THE EXAMPLE OF KICO-POLSKA SP. Z O.O.

(pages 309-317)

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Keywords: return logistics, material delivery, packaging turnover, simulation of the logistics process

Abstract: An effective enterprise means correctly implemented processes. Today, logistics plays an important role in the company, and it influences the processes carried out in production companies, ensuring the implementation of its most important function - production. The article analyses the processes of trading in returnable packaging. The optimisation of these activities was carried out on the basis of a program for simulating logistics processes. The main purpose of the article is to identify the impact of the processes of material delivery and packaging turnover on the functioning of a production company. The article is based on a case study of a manufacturing company. In the discussed case, the FlexSim program was used to simulate logistic processes. The situation presented in the article allows to shorten the time and reduce costs that were necessary for the accepted materials to be made available for processing by introducing returnable packaging, adapted to be transferred directly to production. Suppliers providing them with materials will allow you to bypass the unnecessary process. Such activities also result in the circulation of returnable packaging.

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INDUSTRIES PIONEERING BLOCKCHAIN TECHNOLOGY FOR ELECTRONIC DATA INTERCHANGE

(pages 319-327)

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Keywords: Blockchain technology, distributed ledger technology, electronic data interchange, Fintech, supply chain, cryptocurrency

Abstract: Rapid development of blockchain technologies promote involvement of methods using categorize research topics, identify the most topical trends, and ascertain the main publishing sources related to electronic data interchange. The study is based on an analysis of scientific publications (2015-2019 years) and investigation on the theory of supply chain and logistic the research is based on theoretical research methods that include a literature review and content analysis. The authors have reviewed 9,780 primary papers published between the years 2015-2019 from major academic databases (EBSCO, Elsevier ScienceDirect, Emerald Insight, Scopus, SSRN; Springer SpringerLink, Web of Science). The results of the research are presented, which at the logistics position describing the usage of blockchain technology for electronic data interchange in multiple industries. In concluding the research, the authors present the research gaps discovered, major trends, most discussed industries and suggestions for future research.

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INTEGRATION OF LOGISTICS SYSTEMS OF DEVELOPING COUNTRIES INTO INTERNATIONAL LOGISTICS CHANNELS

(pages 329-340)

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Keywords: logistics systems, logistics performance, integration, transit, LPI

Abstract: Modern logistics significantly influences the globalization and internationalization processes. Logistics systems are becoming increasingly important in today's rapidly changing environment. The aim of the article was to investigate the national logistics systems of developing countries in the context of their integration capabilities. The main methods used in this study are statistical analysis, index, graphical and analytical methods, methods for estimating structural dynamic shifts, comparisons. Commonly used methods of economic research, as well as statistical analysis and interstate comparisons, economic modelling (trend analysis to determine the forecast level of LPI for Ukraine), etc. were also involved. The logistics environment of Poland, Bulgaria, India and Ukraine, as well as the factors of its formation are evaluated. The components of the logistic portrait of the country in the context of integration capabilities of the logistic system are offered. It was found for the studied countries that the destimulator of the national logistics system is infrastructure (for Poland), infrastructure and customs (for Bulgaria and Ukraine), customs (for India). It is these components that need priority attention in the context of increasing the integration capabilities of logistics systems, because the results indicate that they lag far behind international standards. Prospects for further research involve studies of the impact of pandemics, globalization, digitalization on logistics systems, including that of developing countries.

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LOGISTICS PLATFORMS - TRENDS AND CHALLENGES

(pages 341-352)

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Keywords: logistics platforms, typologies, concepts

Abstract: Logistics platforms (LP) are business models developed to improve the performance of all logistics activities of a supply chain (SC). About logistics platforms, the scientific literature details the management, implementation, importance, typologies, comparisons with international platforms, as well as cited case studies therein. The literature also highlights many trends of the adoption of technology as well as challenges resulting from the rapid evolution of said technology. We present a discussion of an LP, as well as an LP's importance to its SC. We discuss eight types of LPs, their applications, and their associated implementation phases. This important volume of articles that we summarize seeks to solve complex problems with mathematical formulations. The literature potentiates the processes carried out in LPs by means of case-study analyses through comparing some LPs of South America against the more technological-based and automation-based LPs of Europe, of Southeast Asia, and of North America. The studies of LPs in global SCs, and enclosed cycle SCs, have shown that there are many challenges stemming from global climate change, which places uncertainty in the process of estimating stochastic parameters in the new global market. This would mandate strengthening the methodologies of Hub- and Cross-docking and understanding trends, such as the need to fortify the management of LPs by utilizing information technologies and communication technologies and updating local markets to make global markets more resilient in the face of pending environmental shifts.

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STRUCTURAL EQUATION MODELING OF SUPPLY CHAIN MANAGEMENT, EMPLOYEE INVOLVEMENT, AND EMPLOYEE WORK PERFORMANCE IN THAILAND'S AUTO PARTS INDUSTRY

(pages 353-367)

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Keywords: supply chain management, employee involvement, employee work performance, Thailand's auto parts industry

Abstract: The objective of this research was to analyse the structural equation modelling (SEM) of supply chain management, employee involvement, and employee work performance in Thailand's auto parts industry. The sample group included 383 employees operating in the aforementioned industry using SEM processing by the AMOS program as the tool. From the research, the latent variable of supply chain management had a direct positive influence on the latency of employee involvement and employee work performance with statistical significance. Simultaneously, the latency of employee involvement had no direct positive influence on the latency of employee work performance. Therefore, the latency of supply chain management did not indirectly influence the latency of employee work performance through the latency of employee involvement.

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A COMPACT AND PORTABLE DESIGN DEVELOPMENT OF A LOW ROLLING RESISTANCE TEST RIG

(pages 369-379)

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Keywords: low rolling resistance, conveyor system, test rig

Abstract: Low Rolling Resistance (LRR) conveyor systems are generally preferred over traditional conveyors because of better overall efficiency lesser energy consumption required to operate. In this work, the design development and analysis path in the process of downscaling the size of an existent LRR test rig to a compact, portable and desktop-sized model is presented. Simulation has been developed using SolidWorks and finite element analysis is conducted using ANSYS to obtain the deformation, stress and strain of each part of the new design.

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SALES FORECAST FOR AGGREGATE PLANNING: CASE STUDY OF AN INDUSTRIAL PRODUCTS COMPANY IN MEXICO

(pages 381-392)

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Keywords: demand planning, aggregate forecast, forecast accuracy, time series, SBC classification

Abstract: This case study presents the analysis through the use of sales estimation tools for planning demand for aggregate level as a finished product in a leading industrial products company in the market in Mexico. First, it aligned the demand plan and the supply plan, recommending the best execution scenario to increase operational efficiency and reduce the cost of operating the supply chain to increase the company's productivity and stay competitive. Then, after analysing the behaviour of the demand for selected products, the authors determined as the main affectation the inadequate precision of the method forecasting and the lack of an aggregate forecasting strategy that allows reducing the variation. Due to this, the most significant effort was concentrated on determining a better-forecasting model and the decision to aggregate the demand based on three relevant criteria: the demand pattern based on the Soft, Intermittent, Erratic or Irregular quadrant,

the best method of the forecast for each product and the time in quarters. As a result, a reduction between 20% and 46% in the forecast variation can be obtained from the above.

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VALUE STREAM MAPPING OF OCEAN IMPORT CONTAINERS: A PROCESS CYCLE EFFICIENCY PERSPECTIVE

(pages 393-405)

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Keywords: shipping port, container terminal, value stream mapping, lean six sigma, process management

Abstract: International cargo transportation is majorly dependent on marine transport, which moves 80% of the international cargo. With the increase in vessel size and the same yard area available for container transportation, it is important to study the processes and understand the efficiency of the container operations process. This research paper aims to review the import container transportation process and understand the process cycle efficiency through lean six sigma concepts. The process is evaluated from the operations process perspective and documentation process at one of the ports of India. The research has been designed by conducting an industry expert review on the process of container transportation from vessel berthing to gate out for import containers, utilising lean six sigma principles such as value stream mapping (VSM) and process cycle efficiency. The results have contributed to the existing knowledge in identifying the waste in the container handling process and demonstrated the inefficiency in the system from the perspective of waiting time of containers due to customs examination, scanning, and inter-terminal handling and movement. The process cycle efficiency of 40% is calculated by analysing the detailed time of handling containers from vessel berthing to gate out. A new future value stream mapping is proposed considering the process cycle efficiency. Future studies will focus on studying this process for export containers and benchmarking the results with the top-performing ocean ports globally.

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CONCEPTUAL FRAMEWORK FOR HEAVY-DUTY VEHICLE PLATOONING IN PHYSICAL INTERNET SYSTEMS

(pages 407-414)

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Keywords: logistics network, Physical Internet, platooning, logistics hubs

Abstract: One of today's most significant challenges is sustainability, which is closely linked to environmentally friendly solutions and resource efficiency. As a solution to these goals, the concept of the Physical Internet emerged, defining the logistics network of the future as a global, open, and interconnected system. Concerning the conditions of vehicles based on Physical Internet-based systems, we cannot ignore the latest vehicle technology innovations that appear more and more intensively in parallel. The framework proposes planning at the strategic, tactical, and operational levels. Different levels of coordination implement different approaches to platoon coordination in line with the network architecture of PI-based logistics systems. We recommend the highest level of offline design in fixed π -hubs. The tactical level involves designing π -hubs online. We propose the implementation of speed-based solutions at the operational planning level.

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INTERNAL FACTORS THAT DETERMINE THE SUCCESS OF PERUVIAN EXPORTS OF GINGER TO THE UNITED STATES IN THE PERIOD 2006 – 2020

(pages 415-421)

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Keywords: internal factors, ginger export, exported quantity, exports

Abstract: This study analyzed the internal determining factors in ginger exports to the United States, being a controversial issue at the international level, due to the demand for exports of multiple products; to describe the internal factors that influence the success of ginger exports and making known the relationship with each of these, concerning the exported quantity, whether the result is favorable or not. The focus of this study is quantitative; it was based on the multiple linear regression model applied to our sample, which is the United States. Numerical data of ginger exports, export price, production volume, Investment in technology and innovation in trade, and exported value of Trademap during the period 2006 - 2020 were obtained. Through the econometric model, it was obtain that there is a direct relationship significant between the export price and the exported quantity ($p < 0.05$), that is; the greater the quantity of ginger exported, the lower the export price, and the higher the production volume, the greater the quantity of ginger exported ($p < 0.05$), the greater the investment in technology and innovation in trade, the greater the quantity exported ($p < 0.05$). These results provide accurate information for medium and large exporting companies of agricultural products, farmers, producers; the results show the key factors that lead to the success of Peruvian ginger exports.

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STREAMLINING PACKAGING AS PART OF SUSTAINABLE REVERSE LOGISTICS PROCESSES

(pages 423-433)

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Keywords: packaging, reverse logistics, workflow, standard operating procedure, waste

Abstract: The aim of the article is to present streamlining reverse logistics challenging the trends of increased amount costs of packaging and a need to meet sustainable development goals. Analysis of the packaging process has identified increased costs for the purchase of packaging, increased volume of imported and produced packaging material, increased volume of packaging waste and thus high recycling fees (related to producer responsibility). A proposed solution for streamlining reverse logistics processes have been introduced, including workflow of the packaging process, a new packaging registration system and measures for standardisation of the packaging process. The solution's main benefits are economical and ecological: first, cost reduction for purchasing new packaging materials and cost reduction for recycling fees, the second elimination of negative influence on the environment by respecting the waste management hierarchy and principles of the circular economy. Other benefits expected for the company are shorter, more informative, and practical training of new employees, reduced time for packaging process through its standardisation and visualisation, and more efficient separation of reusable packaging.

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IMPACT OF DIFFERENT PRICE MOVEMENTS ON THE ACCURACY OF NUMERICAL PRICE FORECASTING

(pages 435-443)

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Keywords: price forecasting, numerical modelling, exponential approximation, commodity exchange

Abstract: The focus of this paper aims at comparison of two prognostic numerical models with different strategies for accuracy improvement. To verify prediction performance of proposed models, the forecasts of aluminium stock exchanges on the London Metal Exchange were carried out as numerical solution of the Cauchy initial problem for the first-order ordinary differential equation. Two techniques for accuracy improvement were utilized, replacing the initial condition value by the nearest known stock exchange and a modification of the differential equation in solved Cauchy initial problem by means of two known initial values. We dealt with an idea of how different price development affected the accuracy of proposed strategies. With regard to obtained results, it was found that the prognoses obtained by using two known initial values were more increasing or decreasing than prognoses calculated by utilizing the initial condition drift. The strategy of a changing form of the differential equation in the Cauchy initial problem can be considered slightly more accurate. Faster increased prognoses were more advantageous especially at a steep price increase and within a price increase following the price decline. A moderate increase of the prognoses determined by the initial condition drift fit reasonably well a price fluctuation and a price decline following the price increase.

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THE INFLUENCE OF RESOURCES DIMENSIONS AND INNOVATION SOLUTION ON VALUE CREATION: A CASE STUDY OF HALAL LOGISTICS SERVICE IN THAILAND

(pages 445-453)

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Keywords: resources dimensions, innovation solution, value creation, halal logistics, mediation

Abstract: This study examines the influence of the relationship between resources dimensions and the value creation of logistics service providers (LSPs), in the economic crisis caused by the coronavirus disease 2019 (COVID-19). It also explores the mediating role of innovation solutions in halal logistics in the relationship between resources dimensions and value creation. Halal logistics play an important role in Muslim countries, and there has been a growing demand for halal products from non-Muslims. Despite its importance, there is limited knowledge of halal logistics problems in Thailand among the LSPs. To understand these issues, the study uses a questionnaire to collect data from 200 Thai LSPs selected through purposive sampling based on their logistics experience in halal, agricultural, or food products. We test the hypotheses using structural equation modeling. The results show a direct relationship between resources dimensions and the value creation of LSPs. The resource dimension is indirectly related to value creation through innovation solutions that mean it acts as a partial mediator in the relationship between resources dimensions and value creation. This study has important implications for LSPs in Thailand in that it demonstrates that they can promote innovation through resources utilization and thereby enhance financial and business performance.

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THE DECADES OF RESEARCH ON SCM AND ITS ADVANCEMENTS: COMPREHENSIVE FRAMEWORK

(pages 455-477)

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Keywords: Global Supply Chain Management, Green Supply Chain Management, SCM 4.0, Supply Chain Management, VOSviewer

Abstract: Supply Chain Management (SCM), a corporate strategy approach to materials and distribution management, has been evolving over the last decades from traditional marketing and production functions. The purpose of the study is to explore the bibliometric data of Supply Chain Management and its advancements. Besides, it describes from the origins of traditional SCM to the progress of modern SCM 4.0, with reference to the benefits, function, importance and limitations

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of all five branches of SCM. The methodology includes a detailed and systematic review of scientific articles published in Scopus indexed journals. The data were obtained from the Scopus database between 1990 and 2021 in order to achieve the study's desired outcome. Boolean operators and filtering were applied to obtain relevant data. In addition, VOSviewer software is used to visually classify and analyse bibliometric data distribution and network using cluster maps. The study's findings were divided into three main categories: publication period, coauthorship and citations, with the results demonstrating the diverse needs of SCM in the globalised digital era. Further, the results emphasise that SCM and its advancements have unique merits around the world, but Sustainable SCM and SCM 4.0 remain the most popular as they play a vital role in changing environmental concerns. In addition, the findings reveal that the visualization networks of each category exhibit the strengths and connections of publications. These visualization networks, followed by their analysis, explain the new insight to the present research. This research also paves the way for future research into the evolving trends of SCM in today's technologically advanced world.
