ABSTRACTS

https://doi.org/10.22306/al.v10i4.426 *Received: 16 May 2023; Revised: 13 June 2023; Accepted: 10 July 2023*

Assessing the Bullwhip effect in supply chain: trends, gaps, and overlaps

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Keywords: Bullwhip effect, operational, behavioral, disruptions.
Abstract: Due to operational and behavioral factors, the Bullwhip effect (BWE) arises with variations in the logistics flow, yielding uncertainty and disturbances along the supply chain (SC). Previous studies have discussed isolated approaches, underestimating the influence of behavioral aspects over operational ones, and multi-factor analysis, which helps to measure and diminish the BWE. This study systematically assesses the bodies of knowledge to identify new trends, emphasizing gaps and overlaps to underly behavioral-operational links and multi-factor scenarios through a unified frame of reference built during the paper review. The results from this research spot new BWE trends like COVID and closed-loop supply chain (CLSC) driven by disruption and return flows; the influence of behavioral causes over pricing, returning flows, production capacity, and batching; the combination of multi-factor topics like pricing, production capacity, synchronization, and order batching. This overview contributes to understanding new trends and connections in the issues, highlighting logistic challenges and opportunities to explore future studies with a broader scope. It also elucidates the BWE causes and how to handle them, which could assist in comprehending its effects and advantages on the technical elements of logistics.

https://doi.org/10.22306/al.v10i4.427 *Received: 25 May 2023; Revised: 20 July 2023; Accepted: 22 Oct. 2023*

Analysis of the usage of modern marketing strategies in commercial logistics

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Keywords: modern marketing strategies, logistics, commercial logistics, competitiveness.
Abstract: In modern marketing, analysing and acting on buyers' needs is very important. Companies try to listen to the opinions of consumers because "they are always right". Marketing for commercial logistics plays an important role. All

the goods in the world are transported by air, sea, pipeline, road and rail. Based on this, large logistics companies that need customer orders and customers who need their services use modern marketing strategies to sell their services. The consumer wants the company to do everything for him at the highest level. He does not turn to the first company he meets but evaluates the market and chooses the best one. The success of the company depends on which strategy the company chooses. Therefore, analysing these strategies is important for society, and only after analysing many examples used in the modern world will it not make a mistake in its choice. The research aims to analyse the innovative marketing strategies companies use in commercial logistics to sell their products and services successfully. In total, five modern marketing strategies were analysed, which are diametrically different and, due to their uniqueness, specific to different types of companies.

https://doi.org/10.22306/al.v10i4.428 *Received: 26 May 2023; Revised: 28 Sep. 2023; Accepted: 07 Dec. 2023*

The disruptive times of Covid-19: higher education leadership and management logistics in Arab nations

(pages 523-535)

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Keywords: COVID-19, higher education, leadership and management, digital learning, online teaching.
Abstract: The COVID-19 Pandemic has changed many parts of the world, turning everything upside down in its path. Everything has changed, not just education, which has seen some unexpected changes in many places worldwide. There has been a rapid transition to online education in Arab nations due to COVID-19, which has both positives and cons. Most institutions can already adapt to education's digital teaching and learning-based future. In this study, a narrative non-systematic review methodology was used to examine the influence of COVID-19 on postsecondary education, the function of academic leaders, and the administration of Arab nations. For this investigation, a total of twenty-six pertinent scientific publications published by Arab countries were considered. Findings revealed that the psyche and emotions of students have been suffering from the limitations of the online higher education system. It was also noticed that students and teachers faced huge problems during this pandemic. The review also explored the strength of existing Middle Eastern countries' digital infrastructure facilities. Despite many limitations, instructors, institutions, and students learned many essential things during this critical COVID-19 period. Additionally, they learned how to adapt to a technology environment, which is crucial for professional success. The study's findings support the attitudes of students, teachers, leaders, managers, and other stakeholders toward online learning in challenging circumstances also in the field of logistics and transport.

https://doi.org/10.22306/al.v10i4.429 *Received: 28 May 2023; Revised: 25 Aug. 2023; Accepted: 16 Oct. 2023*

Service quality of e-hailing taxi services in Johannesburg

(pages 537-548)

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Keywords: customer satisfaction, e-hailing taxi, safety, public transportation, service quality.
Abstract: The study examines the service quality dimensions of e-hailing taxi services for passenger flow in Johannesburg. The objective is to determine the major service quality characteristics that affect customer satisfaction for using e-hailing taxis in Johannesburg. Questionnaires were randomly distributed to 499 e-hailing taxi users in Johannesburg. This study identified and tested service quality dimensions relevant to passengers' desire for a transport service. The study added safety and affordability to the traditional five service quality factors for analysis. The data collected were subjected to exploratory factor analysis (EFA) and regression. EFA identified reliability, tangibility, safety, and empathy as the major service quality factors for e-hailing taxis in Johannesburg. It was found that these variables significantly affect customer satisfaction with e-hailing taxi services in Johannesburg. A change in reliability will contribute about 19% to customers' perception of e-hailing taxi services, 28% for tangibility, 15% for safety and 19% for empathy, respectively. The study indicates the importance of safety as a major service quality dimension of public transportation. It implies that e-hailing taxi operators need to pay attention to passengers' safety with vigilance and appropriate safety measures.

https://doi.org/10.22306/al.v10i4.432 *Received: 04 June 2023; Revised: 12 Nov. 2023; Accepted: 03 Dec. 2023*

Simulation of operations on the production line as a tool for making the production process more efficient

(pages 549-556)

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Keywords: production operation, simulation, model, experiment.
Abstract: For a company to make a profit and satisfy customers' needs, it must have the correct individual processes - the production process is one of the most important. This paper proposes a solution to eliminate the problem based on identifying the cause of the blocking - idle times in several workplaces of the production line. Another goal was to determine whether increasing productivity and the number of products on the given line is possible. At the beginning of the research, a system analysis of production operations was carried out. A simulation was chosen as a tool for solving the goals. Tecnomatix Plant Simulation creates the simulation model. The model was verified by a simulation experiment that simulated the current state, and the data obtained by the analysis were used. The experiment was performed for three simulated times: 8, 16 and 48 hours. After the verification of the model, experiments were performed on the models. The paper presents the results of three experiments for a simulated time of 48 hours. Based on the experiments, it was found that in the case of shortening the work cycle at critical workplaces No.5 and No.15, it is possible to make the process more efficient - to equalise the workload of individual workplaces and increase production by 25%.

ABSTRACTS

https://doi.org/10.22306/al.v10i4.434 *Received: 05 June 2023; Revised: 26 Nov. 2023; Accepted: 10 Dec. 2023*

Improving allocation and layout in production logistics

(pages 557-565)

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Keywords: allocation and layout, logistics, system, workplaces, production.
Abstract: The article deals with the principled solution of allocation and layout of workplaces in a company producing of variety building components. Allocation and layout are very important areas for ensuring the efficient operation of companies engaged in production as well as in commercial activities. Both allocation and layout solutions have a strategic importance for companies. The investigated company produces construction metal elements as a part of modern construction technologies. The problem is related to the constant improving activities in the company in order to ensure its competitiveness on the market. The production process of construction metal elements consists of workplaces such as cutting, drilling, milling, welding and galvanizing. Workplaces for inspection and loading of finished products are non-production. The solution of the project was aimed at streamlining activities in terms of logistics, material flows as well as in terms of safety.

https://doi.org/10.22306/al.v10i4.435 *Received: 10 June 2023; Revised: 12 Sep. 2023; Accepted: 09 Oct. 2023*

Do I need to use it? Factors influencing the intention to adopt automated parcel lockers as last-mile delivery services

(pages 567-575)

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Keywords: UTAUT, parcel locker, last-mile delivery, e-commerce, intention.
Abstract: Researchers have been intrigued by parcel lockers for last-mile delivery services, prompting them to investigate the matter more. This study examines factors affecting consumers' intention to use parcel lockers through the Unified Theory of Acceptance and the Use of Technology (UTAUT). This study proposed the mediating role of performance expectancy in the relationship between social influence and effort expectancy with the intention of adopting parcel locker services. An online structured questionnaire was employed and managed to collect data from 444 respondents. The non-

probability purposive sampling technique was chosen as the sampling technique, while the SmartPLS version 4.0 analysed research data. The data found that performance expectancy and compatibility over consumers' intention strongly exerted the intention to use parcel lockers. For the mediator factor, the analysis uncovered evidence that performance expectancy can effectively mediate the relationship between social influence, effort expectancy, and intention to adopt parcel lockers. The research demonstrated the significance of the UTAUT model in pinpointing the reason for the parcel locker's adoption intention in Malaysia. The research findings could provide meaningful information to logistics businesses, courier companies, and relevant government bodies to design and implement strategies to enhance the acceptance and usage of parcel lockers as the last delivery option compared to home delivery.

https://doi.org/10.22306/al.v10i4.436 *Received: 13 June 2023; Revised: 30 Sep. 2023; Accepted: 12 Oct. 2023*

Supplier relationship management and its impacts on purchasing performance in aircraft maintenance, repair, and overhaul in Thailand

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Keywords: supplier relationship management, purchasing performance, aircraft maintenance, MRO, Delphi.
Abstract: Supplier Relationship Management (SRM) has been recognized to play an important role in improving purchasing performance. However, there is no evidence yet to prove this application in the aircraft maintenance, repair, and overhaul (MRO) industry in Thailand. This paper studied SRM which are arm's-length SRM and cooperative SRM practices, and their impacts on purchasing performance in the aircraft MRO industry of Thailand by using Delphi Technique. Data are collected from in-depth interviews, and by means of a questionnaire. Sample group of this research are 20 specialists who involved with purchasing processes in aircraft MRO. The results show that cooperative SRM improves purchasing performance in all aspects, while arm's-length SRM only improves purchasing performance in reducing sales price.

https://doi.org/10.22306/al.v10i4.437 *Received: 16 June 2023; Revised: 24 Sep. 2023; Accepted: 11 Oct. 2023*

Inventory planning of raw material using Silver Meal and Wagner Whitin Algorithm

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Keywords: inventory, forecasting, Silver Meal, Wagner Whitin Algorithm.
***Abstract*:** Material inventory planning is needed in the industrial world to advance a business because it will affect the costs incurred, the production process, and the profits generated by the company. The company has a problem that occurs when the control of raw material inventory could be more optimal. It recorded that throughout 2021, 33.647,18 meters of fabric pants were stored in warehouses. This is influenced by several factors, including the calculation of safety stock, lead time due to uncertain logistics and the selection of methods that have not been maximized. The novelty of this research is that it discusses inventory planning, the methods used are Silver Meal Algorithm and the Wagner Whitin Algorithm. Data processed is on demand for clothes and jeans throughout 2021. The results show that the Silver Meal is suitable for five materials, and the Wagner Whitin Algorithm is on one material. Companies can use both methods for each raw material. Nevertheless, it is more optimal if the company utilizes only one method for procurement of raw materials, the Silver Meal because when it is used in the long term, the cost of raw materials is less than the Wagner Whitin Algorithm. The Siler Meal's total inventory cost is Rp. 138.281.497, and the Wagner Whitin Algorithm is Rp. 170.010.097.

https://doi.org/10.22306/al.v10i4.438 *Received: 17 June 2023; Revised: 13 Sep. 2023; Accepted: 22 Nov. 2023*

Improving last mile distribution systems through the Internet of Things: a South African case

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Keywords: logistics, last-mile, distribution, IoT.
Abstract: The study investigates the impact of the IoT on the cost and quality of last-mile logistics, the critical and often challenging final phase of the supply chain. With the relentless growth of e-commerce and the increasing demands for efficient and reliable delivery services, understanding how IoT affects last-mile logistics is increasingly becoming important. Through the integration of IoT technologies such as GPS tracking, RFID systems, and real-time data analytics, the study aimed to assess the extent to which the application of the IoT affects the cost and quality of last-mile distribution in South Africa. As a result, the study provides valuable insights into the potential cost savings or increases associated with IoT adoption, quality challenges and areas of improvement, customer satisfaction and the overall performance of last-mile distribution systems. The methodology involves the collection of primary data from selected distribution companies in South Africa. Statistical software was used to analyse the data to shed light on the tangible benefits and challenges associated with IoT adoption in last-mile logistics as they relate to cost and quality. The research findings indicate that implementing IoT in last-mile distribution systems in South Africa can significantly improve efficiency and effectiveness. The IoT integration with existing infrastructure enables seamless communication, proactive decision-making, and reduced delivery delays. Overall, by leveraging IoT technologies and real-time data analysis, organisations can optimise their distribution processes, reduce costs, improve quality, and enhance overall customer experience.

https://doi.org/10.22306/al.v10i4.439 *Received: 23 June 2023; Revised: 30 Oct. 2023; Accepted: 20 Nov. 2023*

Standards of Value Stream Mapping as a tool supporting logistics processes in the healthcare system in Poland

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Keywords: Value Stream Mapping, healthcare, logistics processes, standard, stroke.
Abstract: According to the World Health Organisation (WHO) a health system consists of many components like organizations, institutions, resources, and people whose primary purpose is to improve health. The system is complex and requires staff, funds, information, supplies, transport, communications and overall guidance and direction to function properly. These elements interact with each other and, as in the logistics system, there are uninterrupted physical, decision-making and information flows between its most important elements, which include: service providers, service recipients (patients), a payer (the National Health Fund), control and supervision institutions, the Ministry of Health. The Polish healthcare system is struggling with many problems, such as insufficient access to health services, inefficient system management, shortages of medical staff, or underfunding. The use of Value Stream Mapping (VSM) standards can significantly contribute to the improvement of logistics processes of the Polish healthcare system. The standards can be also used to improve the processes of treatment of other diseases, but also the functioning of healthcare units.The aim of the article is to present the possibility of applying Value Stream Mapping standards in the process of ischemic stroke treatment as the results of the project 'Lean Management in Healthcare', implemented by the consortium consisting of the Medical University of Warsaw, the Institute of Psychiatry and Neurology in Warsaw and the Polish Society of Health Economics, financed by the National Centre for Research and Development under contract no. IS-2/200/NCBR/2015.

https://doi.org/10.22306/al.v10i4.440 Received: 23 June 2023; Revised: 15 Sep. 2023; Accepted: 01 Nov. 2023

Digitalization, innovation and marketing in logistics

(pages 615-624)

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Keywords: digitalization, innovation, marketing, logistics, efficiency.
Abstract: Global digitalization has caused a modification of the modern world market and the adaptation of business strategies of modern companies. The target of the research is to define the peculiarities of trends in the evolution of digitalization, innovation in marketing and logistics of modern companies. It is substantiated that the efficiency and competitiveness of a business are constructively related to the implementation of digital innovative technologies in the marketing and logistics system to optimize business processes and reduce management and operating costs. Based on scientific generalization, it is indicated marketing and logistics interaction and specific features of key aspects in influencing competitiveness. Based on structural and logical analysis, revolutionary technologies and innovations in the marketing and logistics system are highlighted for maximum automation of business processes of modern companies, based on which their development trends are determined. The need for a systematic approach to the consideration of marketing and logistics as inseparable elements of the continuous cycle of companies (production-promotion-sales-service-logistics) is put forward. Based on structural and logical analyze peculiarities of the implementation of the marketing logistics system of companies in conditions of digitalization and innovation, which can be applied in the forming a digital marketing strategy and managing the logistics system of companies in the long term.

ABSTRACTS

https://doi.org/10.22306/al.v10i4.441 *Received: 24 June 2023; Revised: 12 Oct. 2023; Accepted: 02 Nov. 2023*

Profit comparison analysis in production system simulation based on lean principles to achieve sustainable manufacturing

(pages 625-636)

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Keywords: production system, lean concept, profit, unit cost, sustainable manufacturing.
Abstract: Companies can achieve effective and efficient process if they make continuous improvements to achieve sustainability. In general, companies are aware of waste in the production process, but do not carry out measurements and analyzes related to this waste, including unit cost and profit analysis. A production system is needed that is able to minimize the unit costs and maximize profits in the company, one of the concepts used is the lean concept. This study aims to analyze the cost unit and profit generated in production systems that apply lean principles. Production system simulation is carried out using the concepts of Heijunka, Jidouka, and Kanban System. These three concepts are applied to a production system simulation that uses miniature cars with unit cost and profit comparison outputs with traditional production systems, pull systems, heijunka, jidouka, and Kanban systems. The results show that the unit cost of simulations 1 to 6 is getting lower, while the profit is increasing. In simulations 1 and 2 no profit was obtained because of implementing the traditional system while in simulations 3 to 6 there was an increase in profit because they had applied lean principles to the production system. Simulations that have implemented the lean concept have low unit costs and increasing profits, but what distinguishes the work methods applied. Production systems that apply the lean concept can help a company achieve sustainability in the economic field.

https://doi.org/10.22306/al.v10i4.442 *Received: 24 June 2023; Revised: 03 Oct. 2023; Accepted: 24 Oct. 2023*

Streamlining logistics flows with lean tools using TX Plant Simulation software support

(pages 637-644)

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ABSTRACTS

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Keywords: logistics, lean, model, simulation, efficiency.
Abstract: A critical factor in the manufacturing industry is waste and losses in individual operations and processes. The expansion of elements of lean production, such as the pull system with the interconnection of key technologies, brings new elements of production planning and control. Thanks to new technologies, many more possibilities exist to uncover potential bottlenecks. Simulations and modelling bring new possibilities for experimentation in the virtual environment of prepared systems or devices without directly disturbing the functioning system. The presented article deals with the issue of applying lean approaches in finding optimal solutions within logistics flows. The aim of the article is to define and test the potential for streamlining logistics flows with TX Plant Simulation software support. The research and empirical part of the study was solved based on a rigorous analysis of the initial situation in a specific company for the selected product group, as the Value Stream Mapping method was used for the analysis. A simulation model of a real line was created in the TX Plant Simulation software with the help of the Value Stream Mapping library for value creation, which is part of the software. The goal was to find out possible waste within the logistics flow, and its causes and propose the necessary steps to eliminate the waste.

https://doi.org/10.22306/al.v10i4.444 *Received: 25 June 2023; Revised: 07 Sep. 2023; Accepted: 06 Oct. 2023*

Improving supply chain risk assessment with artificial neural network predictions

(pages 645-658)

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Keywords: supply chain risk management, artificial neural network, risk prediction, risk assessment, supply chain.
Abstract: Operational excellence serves as a cornerstone for the success of businesses,and effective risk management is key for minimizing disruptions, and ensuring business continuity. This paper proposes an innovative methodology that harnesses the power of machine learning in supply chain risk assessment to enhance the ability of organizations to identify, predict, and mitigate various risks that can impact their efficiency, effectiveness, and resilience. This study addresses the inherent subjectivity in human assessment which presents a significant challenges and potential biases in the evaluation process. Auditors, who play a crucial role in identifying and assessing risks within an organization's operations, often rely on subjective judgments influenced by their experiences, expertise, and personal biases. To mitigate this issue, we employ a deconstruction approach, breaking down risk factors into sub-factors, and leverage an Artificial Neural Network model as a predictive tool for accurate risk level predictions and enhanced assessment objectivity. Real-world data from a global automotive company specializing in wiring harnesses are utilized to train the Neural Network model, on a dataset of 2100 samples, exhibits good performance of risk prediction as evaluated by appropriate metrics such as Determination Coefficients and Mean Square Error. Overall, this research contributes to the advancement of risk management practices addressing the challenges of subjectivity in human assessment, to more objective by providing a reliable and data-driven framework that supports managers in strategic decision-making and fortifies supply chain operations through an early risk alarm, empowering organizations to proactively manage risks and achieve autonomy in effective risk management.