ABSTRACTS

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A study of the connection between lean manufacturing and ergonomics

(pages 437-442)

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Keywords: CERAA, key indicator method, REBA, value stream mapping.
Abstract: If an organization implements lean manufacturing without concurrently considering ergonomic requirements, the anticipated outcome, such as increased production productivity, may not be realized. Several authors have emphasized the significant potential for synergies resulting from the successful integration of lean manufacturing and ergonomics. The objective of this paper is to exemplify the application of lean manufacturing tools in enhancing the productivity of casting aluminium alloys while incorporating ergonomic considerations. The results of the assessment of working positions through the CERAA application before intervention indicate a potential risk of increased physical strain on operator. Utilizing a hybrid research design, we conducted a singular case study that delves into the industrial implementation of a robotic cell in the production line for manufacturing battery covers for electric/hybrid vehicles. The results of the assessment of working positions after the implementation of robotic technology do not indicate a potential risk of increased physical load on the operator. This case study demonstrates the integration of ergonomics and lean manufacturing principles in practice.

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Optimization of the current logistics network with a focus on a specific company in the state of Nuevo Leon, Mexico

(pages 443-454)

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Keywords: logistics network, consolidation, warehouse location problem (WLP), optimization, forecast.
Abstract: One of the key strategic decisions to make as an enterprise is the optimization of the current logistics network. The main parameters to be considered are the location and amount of storage facilities, as well as cost, the availability and proper function of existing infrastructure and targeted market expansion milestones. The scope of this paper deals with a construction Company in the state of Nuevo León, Mexico. Nearshoring has been one of the main driving factors of increased population growth in the region. Urban expansion is becoming increasingly complex and decentralized, complicating the flow of materials in material distribution networks. Each allotment is presently developed with a warehouse, which in turn requires an investment in infrastructure, overhead, security and management. This paper aims to establish an optimized supply network through consolidated storage facilities without compromising the reliability of the existing routes. The chosen modelling method is optimization through mixed-integer programming. The main object of study in this paper is the comparison between the existing cost structure and the projected costs that would result from consolidating storage facilities and transportation. The results of the analysis are presented, having executed a successful application of the model, and display a 20.9% decrease in cost associated to operating the logistics in a ten-year forecast for a construction Company.

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Comprehensive risk management in agricultural supply chains: strategies and approaches - case of Persian lime in Veracruz

(pages 455-467)

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Keywords: Persian lime, supply chain, risks, failure mode and effects analysis, Decision-Making Trial and Evaluation Laboratory.
Abstract: The Agri-Food Supply Chain (AFSC) is essential for global food supply, economic development, and employment. However, it faces significant risks that undermine its efficiency, mainly due to the perishability of its products, which complicates risk management. Despite its importance, research on risks in this sector, especially for specific agricultural products, remains limited. This study addresses this gap by identifying, evaluating, and prioritizing risks in the first link of the Persian Lime (Citrus latifolia Tanaka) AFSC in the Citrus District of Martínez de la Torre, Veracruz, Mexico. Using semi-structured interviews with eleven experts in integrated crop management, 53 risks were identified and categorized into natural, pest, disease, supply, and operational risks. The Decision-Making Trial and Evaluation Laboratory (DEMATEL) technique was applied to analyze cause-effect interactions. At the same time, Failure Mode and Effects Analysis (FMEA) was used to prioritize these risks. The results indicate that pesticide scarcity is the most influential causal risk, while an incidence exceeding 5% of trees affected by gummosis (Phytophthora spp.) has the most excellentmost significant impact. Additionally, high staff turnover was identified as the most critical risk. These findings give decision-makers a robust foundation to develop risk management plans that enhance the AFSC's resilience. Such measures will help ensure a continuous food supply and enable processing and packing companies in the subsequent links to meet demand, thus improving the stability and sustainability of the agri-food system amid long-term disruptions.

ABSTRACTS

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Improving performance measurement through quality management in logistics 4.0: case of a smart port

(pages 469-478)

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Keywords: Logistics 4.0, smart port, quality management and competitiveness, international trade and industrial development, performance.
Abstract: This research project focuses on improving logistics performance in the context of Logistics 4.0, by implementing the use of quality management principles. In addition, the study looks at international companies operating in the port of Tangier Med. The objective is to measure the impact of improving overall performance on overall business results, taking into account quality standards, management tools and the effectiveness of decisions made. The research will take a quantitative approach by examining logistics performance improvement variables in a 4.0 context. It focuses on how the integration of quality management methods can influence business performance. This study contributed to the development of scientific research in the field by providing tangible information and quantitative data on the impact of improving logistics performance in an international environment. The results of this research aim to provide innovative solutions for international companies operating in the port of Tangier Med. By combining the concepts of Logistics 4.0 with quality management practices, companies could benefit from a significant improvement in their operational efficiency and overall results. Ultimately, this research project has contributed to the promotion of best practices and the adoption of innovative approaches in the field of Logistics 4.0, thus providing competitive advantages to companies operating in this sector. A quantitative methodology was adopted. Surveys of 300 employees at the port provided quantitative data.

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Supply chain resilience as a mitigating factor for the impact of the Sudan Crisis on the performance of food manufacturing enterprises in Egypt

(pages 479-490)

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Keywords: Sudanese Crisis, Egyptian food industry, supply chain resilience, multigroup analysis, risk mitigation.
Abstract: This research investigates the Sudan Crisis 's impact on the performance of food industry enterprises in Egypt. It focuses on the moderating role of supply chain resilience (SCR) capabilities in mitigating these effects and their direct influence on enterprises' performance. Employing the quantitative approach, a questionnaire survey was used to examine the hypotheses and theoretical framework. Data were collected from 365 Egyptian food industry enterprises, and partial least squares structural equation modelling (PLS-SEM) with multigroup analysis (MGA) was used to analyse the data. The results show that the Sudanese Crisis has a negative impact on the performance of enterprises, with a path coefficient (-0.111) for both grouping sectors, indicating that these effects are not statistically significant (p-values > 0.05). Also, the results indicate a significant and positive relationship between supply chain resilience (SCR) capabilities and enterprises' performance across the animal-based industry and 0.616 for the plant-based industry groups of food industries. The path coefficients for the SCR impact on ECP are 0.596 and 0.616 for the two industries, respectively. However, supply chain resilience capabilities demonstrate a significant moderating effect in the plant-based industry, p-value of 0.029. underscoring the importance of resilience measures in mitigating disruptions. The research concludes that fitted resilience strategies are essential for enhancing supply chain adaptability and protecting firm performance, particularly in industries exposed to regional conflicts. Recommendations include investments in diversified supply chains, enhanced logistical strategies, and policy support to strengthen SCR capabilities within the food industry.

ABSTRACTS

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A comprehensive risk evaluation method for sustainable building construction

(pages 491-501)

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Keywords: risk factors, RII, WPM, Delphi method.
Abstract: Effectively mitigating the risks associated with sustainable development is a key problem when building in developing nations. This method requires businesses to act following moral and ethical standards while balancing financial goals. Stakeholder consensus is critical for executing sustainable risk management, which strives to reduce risks while increasing possibilities. The research focuses on sustainability concerns in Iraqi construction projects, with the primary goal of identifying reasons causing project delays using a comprehensive framework and rigorous methodology. The initial stage of the approach is gathering data from several construction sites. To assess project risks, the weighted product approach was employed, which included factor scores from prior research to create structured questionnaires that were then used to study the influence of various aspects. To establish the significance of each aspect, the relative relevance index was used, and Delphi expert consultations were held to provide additional insights. Historically, Iraq's construction sector has disregarded risk management and restrictions of finance. The project hazards were assessed using surveys, expert comments, and exploratory research. Logistic challenges were also considered in the assessment process. Microsoft Excel made performance evaluations easier, and MAT F5 obtained the highest rating for sustainable materials in WPM's risk assessment. Furthermore, equipment output has emerged as a critical aspect in guaranteeing technical compliance. This study introduces a structured risk evaluation approach for improving sustainable construction practices in developing countries.

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Commuting versus e-flexibility: the workforce's choice

(pages 503-508)

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Keywords: Austria, e-flexibility, mobility, commuting time, coworking space.
Abstract: Covid-19 changed people's mobility and lifestyles. An ad hoc Google Forms questionnaire was sent to N=843 Austrian e-commuters across the tertiary sector to capture the impact of the commute on the workforce's e-flexibility inclination. The findings show that, where possible e-flexibility may help to reduce the general reliance on commuting. All hypotheses were supported: the data show that the proportion of satisfied people working remotely increases as commuting time increases; interestingly, the ideal e-working model is a hybrid one of commuting 3-4 times a week (41.4%); the debate on whether or not to return to the office is far from settled, 73% of respondents are reluctant to give up the 9-5 space, the workforce living further

from the office prefers to work remotely more often, and, not surprisingly, the workforce living not far from the organisation prefers to keep working in the office; coworking space seems to be on the rise (72%) among employees in shared work environments. Employees who live further from the office do not want the coworking possibility. Overall, spending some of the week working from home is a boon for employees in many circumstances, especially those who live far from the office.

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The evolution of international logistics in the era of globalisation: opportunities and challenges for business operations

(pages 509-516)

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Keywords: international logistics, logistics performance, globalization, logistics operations, international trade.
Abstract: The state of international logistics is closely related to political, economic, and technological changes that take place in the context of dynamic technological development, military threats, and, at the same time, integration of countries in search of partners. The article aims to highlight the main aspects and features of the international logistic development in the globalization context. The methodology included general scientific methods of studying the chosen research object (analysis, synthesis, grouping). The logistics productivity index is considered the leading indicator of the global logistics sector developmet in 2018-2023. The study's results demonstrate the dependence of logistics development on several factors. In the leading countries, according to the Logistics Performance Index, the drivers of change are investments in infrastructure, transport networks, IT communications, technology, digital networks, logistics centres and hubs; logistics education and competence; government support and incentives for the sector; and a stable political and economic environment that fosters investment and innovation. The article highlights the main aspects and features of the international logistics development in globalization condition. The practical value ofthe study lies in highlighting the challenges faced by the logistics sector on a global scale in the context of technological shifts and military threats (the need for investment in maintaining logistics sustainability, changing supply chains, and rising delivery costs).

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Optimising process flow in manufacturing: a study on standardisation and equipment capacity

(pages 517-528)

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Keywords: flow of processes, optimalization, theory of constraints, equipment capacity, standardization.
Abstract: The main goal of a manufacturing company is to make a profit, which requires efficient in-house processes and smooth process flow. The key tools for increasing productivity and optimizing production are process standardization, workflow efficiency, and the application of the theory of constraints (TOC). Process standardisation leads to the standardisation of workflows and the elimination of variability. TOC focuses on identifying bottlenecks in the process and optimizing them, resulting in cost reduction, increased productivity, and improved enterprise profitability by enhancing process flow. The presented paper describes a case study aimed at analysing selected processes at robotic welding workstations in a selected industrial enterprise. The aim of the paper is to identify opportunities to improve production efficiency at robotic welding workplaces, focusing on standardization of work procedures, more efficient use of production equipment capacity, and improvement of the remuneration system, which has a direct impact on workflow efficiency, process optimization, and the financial performance of the enterprise. The results of the research point to a lack of standardisation of working practices, low utilisation of the equipment capacity (30% below the planned value) and limitations in the remuneration system that hinder the achievement of the full productivity potential. The combination of inefficient use of equipment and working time increases financial costs and limits profitability. An effective bonus system can increase employee motivation, support productivity improvements and contribute to cost reduction. To address these issues, the implementation of standardised work practices, optimisation of equipment utilisation and effective workforce management are needed.

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Enhancing supply chain performance through digitalization: insights from a qualitative study in an emerging market

(pages 529-539)

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Keywords: supply chain performance, digitalization, artificial intelligence, logistics optimization, flow management.
Abstract: This study aims to explore the key determinants of supply chain performance in the era of digitalization, with a particular focus on the Moroccan context. Despite increasing interest in supply chain optimization, limited empirical research exists on how digital transformation influences supply chain efficiency in emerging economies. This gap highlights the need for a deeper understanding of the relationship between technological advancements and logistics performance in regions such as Morocco. A qualitative approach was adopted to investigate this issue, based on semi-structured interviews with 30 supply chain professionals. The data collected were transcribed and analyzed using IRAMUTEQ software, which allowed for a textometric analysis including cluster identification, factorial correspondence analysis (FCA), and similarity analysis. The results reveal that digitalization, real-time monitoring, data analytics, and artificial intelligence significantly enhance supply chain agility, visibility, and operational efficiency. Other critical determinants identified include logistics optimization, inventory management, and customer satisfaction. The findings also underline the importance of supply chain coordination, risk management, and sustainability strategies in fostering resilience and long-term competitiveness. This study provides both theoretical and practical implications by offering new insights into the interplay between digital technologies and supply chain performance in a developing country context. It emphasizes the need for businesses to invest in digital tools and strengthen collaboration across supply chain partners to remain competitive in a rapidly evolving environment.

ABSTRACTS

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Optimizing weaving industry clusters: strategic logistics and growth solutions for competitive regional development

(pages 541-550)

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Keywords: weaving industry clusters, strategic logistics management.
Abstract: This research explores the clustering potential of the weaving industry in South Central Timor District, a sector deeply embedded in cultural heritage with significant economic potential. A qualitative descriptive approach, complemented by spatial analysis using the Average Nearest Neighbor method in ArcGIS 10.5, was employed to identify clustering patterns and assess the feasibility of cluster formation. Of the 1,013 weaving SMEs analyzed, 78 agglomeration centers were identified, encompassing 795 SMEs, with a spatial ratio of 0.060856 and a Z-score of 57.295888, indicating a strong potential for industrial clustering. The paper examines both the opportunities and challenges associated with clustering, particularly in terms of infrastructure development and the need for enhanced collaboration among key stakeholders. It presents a cluster-based development strategy focused on sustainability, cooperation, and market expansion to improve the competitiveness of the weaving industry at local and global levels. The study highlights the critical need for strengthening institutional support, enhancing access to financial resources, and implementing capacity-building programs to improve the entrepreneurial and technical capabilities of artisans. Additionally, fostering partnerships between government bodies, private enterprises, and academic institutions is essential to encourage innovation and knowledge sharing. By adopting an inclusive and well-coordinated cluster development model, the weaving industry in South Central Timor has the potential to achieve sustainable growth while preserving its cultural heritage.

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Factors influencing the development of competitive capabilities of border trade entrepreneurs

(pages 551-561)

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Keywords: lifestyle, foreign environment, competition, cross border.
Abstract: This study investigates the factors influencing export competitiveness in border trade by focusing on Thai entrepreneurs engaged in trade with Cambodia. This study employs structural equation Modeling (SEM) to examine the relationships between consumer culture and lifestyle, foreign environmental factors, and export competitiveness. The data were collected from 200 establishments across various industries, primarily in the food, beverage, and tobacco sectors. The results indicate that the foreign environment factor significantly influences export competitiveness ($\beta = 0.613$, $p < 0.001$), while consumer culture and lifestyle play a crucial role in shaping foreign environment perceptions ($\beta = 0.77$, $p < 0.001$). However, consumer culture and lifestyle do not directly affect export competitiveness, highlighting that entrepreneurs prioritize market expansion without altering product offerings to accommodate local preferences. This study confirms that Thai products are well-received in Cambodia because of their established reputation and consumer trust. Additionally, border trade presents opportunities for Thai businesses to capitalize on infrastructure development and economic growth in neighboring countries. These findings support the theory of planned behavior by emphasizing the importance of market analysis, motivational factors, and operational preparedness in trade decision-making. From a practical standpoint, this study offers key policy recommendations, including entrepreneurial knowledge development, cross-border collaboration through special economic zones (SEZs), customs system enhancement, and the adoption of electronic platforms to streamline trade processes. These measures aim to improve trade efficiency and economic cooperation between Thailand and Cambodia.

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Managing risks in the transport of dangerous goods: the role of international regulations

(pages 563-569)

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Keywords: transport, dangerous goods, risk, regulations regarding transport of dangerous goods, risk reduction.
Abstract: The use of applicable international conventions and agreements related to various types of transport helps to ensure safe and efficient movement of passengers and goods, as well as confirmation of transport by providing appropriate, standardized documentation. International conventions and agreements allow for better coordination of flow of people and goods between countries, introduce safety standards but also help to minimize environmental risks. In the context of increasing challenges related to environmental protection and different levels of experience reflected by solutions in this field implemented in different countries, international regulations, applicable in these countries play a key role in shaping responsible and safe flow of goods. It concerns first of all flow of dangerous goods, which, in general can be described as any material posing a threat to human health and life. The objective of the paper is to describe the impact of the use of international conventions and agreements on reducing the risk when transporting different types of dangerous goods. This article primarily focuses on the regulations regarding the treatment of dangerous goods in road, rail and sea transport because these regulations are among the most frequently used. For the practical organization and supervision of the flow of dangerous goods, the groups of risk factors discussed in the article, the comparison of dangerous goods classifications across road, rail, and sea transport conventions, as well as the examples of universal risk-reducing solutions based on regulatory requirements, prove particularly useful.

ABSTRACTS

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Enhancing cybersecurity readiness in express logistics: the role of cyber-attack features and project team skills

(pages 571-594)

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***Keywords*:** logistics cybersecurity, express delivery services, cybersecurity readiness, cyber-attack features, project team skills.
Abstract: The increasing frequency and complexity of cyberattacks pose a significant threat to the express logistics sector, where digital coordination and data integrity are essential for operational continuity. This study examines how specific cyber-attack features influence team-based cybersecurity readiness, focusing on the mediating role of project team skills. The research addresses a practical problem faced by logistics firms in Jordan, many lacking standardized cybersecurity protocols despite rising digital adoption. Using a quantitative, cross-sectional design, data were collected from 310 employees in express delivery service companies. Structural equation modeling (SEM) via SmartPLS was employed to test the proposed relationships. The results demonstrate that cyber-attack features significantly affect cybersecurity readiness, both directly and through the partial mediation of project team skills. Teams with stronger technical and collaborative capabilities were more effective in translating threat exposure into organizational preparedness. The model accounted for 69% of the variance in cybersecurity readiness. This study contributes a novel integration of technical threat dimensions and human-centered readiness within logistics operations. It offers actionable insights for logistics managers aiming to strengthen cyber resilience through targeted skill development and team-based interventions.

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Logistics flow disruptions through the Suez Canal: enhancing supply chain risk management and resilience

(pages 595-603)

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Keywords: supply chain resilience, Suez Canal disruptions, risk management, logistics, sea freight.
Abstract: The study examines the Suez Canal's crucial role in global supply chains and the consequences of its disruptions, focusing particularly on the 2021 ship blockage and the escalation of the Red Sea conflict from 2023. It investigates these events from a supply chain resilience perspective, exploring risk mitigation strategies and responses to arising risks. The methodology includes an extensive literature review on Suez Canal disruptions and their cascading, global effects. Qualitative data were gathered through semi-structured interviews with six raw material procurement planners from a European multinational production company, responsible for managing goods flow from North America and Asia-Pacific to Europe. The interviews and a dedicated workshop were transcribed and thematically analysed using NVivo software. Findings offer valuable insights into the effects of disruptions on global supply chains, highlighting significant delays in supplier awareness of critical global events, and emphasizing the importance of effective communication, continuous risk management, and maintaining safety stocks. The study also identifies lessons from past disruptions, suggesting strategies to enhance supply chain visibility, diversifying transportation routes, while promoting the importance of sustainability, and strengthening supplier relationships. This research addresses a critical logistics topic by focusing on the 2023–2024 Red Sea conflict and aims to bridge a gap in the existing literature regarding supply chain

resilience and risk management related to Suez Canal disruptions. By incorporating firsthand industry experiences, the study offers original, practical insights for mitigating the impact of such disruptions on global supply chain operations.