ABSTRACTS

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ANALYSIS OF TRUST VIA THE INTERRELATIONS BETWEEN INTERMEDIARIES IN A DECENTRALISED SUPPLY CHAIN

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Keywords: trust, intermediaries, subgame Nash equilibrium, supply chain.
Abstract: This article looks at the role of middleman relationships in a decentralized supply chain, considering a three-element structure consisting of an independent supplier, a distributor, and a producer. We study a model based on game theory that allows the analysis of the coordination of the three links, which evaluates qualitative criteria in their supply relationships, distribution, and reception of their operating preferences. The objective of the research is the construction of trust by analyzing the interrelationships of the three links for their consolidation, or not of the supply chain, using the Nash equilibrium, which allows summarizing satisfaction and loyalty throughout the supply chain. The set of Nash equilibria reflects that achieving satisfaction in the interrelationships between them is the main strategy to be followed by companies seeking to promote coordination within their operations. At the same time, we observe that only one agent is sufficient to maintain the flow of materials, i.e., the problem of the free-rider arises between us. In this study, five different equilibria are obtained, of which in four the supply flow continues within the chain, and in one equilibrium the relationship fails.

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ASSESSMENT OF THE URBAN FREIGHT REGULATIONS IMPACT ON THE TRANSPORTATION COST

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Keywords: urban logistics, modelling, tariffs, vehicle carrying capacity, local tax regulations for transportation.
Abstract: The paper will investigate the impact of the vehicle carrying capacity to which the local tax is applied on forming the cost of delivery. The cost of 1 ton of freight under different tax scenarios is estimated in the paper: without tax 0, with fixed tax – 10% and with progressive tax from 0 to 75%. The greatest effect on reducing the vehicle's load capacity during urban deliveries showed a progressive tax. The developed regression model allows determining the cost of transportation of 1 ton of goods depending on the technological parameters of transport operations, the costs of the transport (logistics) operators to perform these operations, and local tax regulations for transport. The application of the model makes it possible to regulate the use of vehicles of a given capacity by the local administration. In contrast to the strict prohibition on the establishment of traffic signs, the use of a progressive tax by the local administration makes it possible to regulate traffic structure by economic methods. Exploring of influence local tax regulations on transportation will lead to the sustainability of the cities in order to provide GREEN technologies.

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IMPROVING THE EFFICIENCY OF TRANSPORT SYSTEM LEGAL REGULATION IN THE CONTEXT OF GLOBALISATION: PECULIARITIES OF THE NATIONAL ECONOMY

(pages 131-139)

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Keywords: logistics, strategy, national economy, transportation, traffic management.
Abstract: The study aims to analyse problems associated with the legal regulation of the transport system. The study is based on the international and domestic ranking of logistics performance. It also takes into account the economic consequences of world internationalisation to optimise logistics performance (this includes the transportation and legal aspects) under the Transport Development Strategy of the Russian Federation until 2030. The study relies on a systematic approach to systematise legislative, economic and social information and thus create an integral system of transport communication. The review of the legal regulation issues surrounding the transport system showed the following supply chain problems: weak policy coordination and a low level of digitalisation. These problems result in low-quality service and low transparency in legal matters. According to the results of this study, the integration of the world's best practices

into transport communications will improve economic efficiency. The scientific novelty of the study is a practical tool to improve transport system efficiency in the context of globalisation, considering the characteristics of the national economy.

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THE IMPACT OF LOGISTICS CAPACITIES ON THE LOGISTICS PERFORMANCE OF LSPS: RESULTS OF AN EMPIRICAL STUDY

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Keywords: logistics capacities, customer satisfaction, logistics performance, international trade, logistics skills.
Abstract: This paper has a dual objective, to specify the logistical capacities of Moroccan Logistics Service Providers (LSPs) and to understand the process by which these capacities contribute to the logistical performance of LSPs. Methodologically, we used the qualitative approach based on a sample of sixteen LSP. The results of this research show that the main logistical capacities of Moroccan LSPs are flexibility and innovation, which respectively abound in reactivity/proactivity and technological innovation / administrative innovation. Similarly, "customer response" appears to be a purpose that overlaps with logistics performance. Thus, this variable mediates between flexibility and logistics performance. This study also tries to analyse the emergence of new moderating variables, particularly "logistics skills," which strengthen the relationship between innovation and customer response, and "communication with employees" as a support for maintaining performance logistics.

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DEVELOPMENT OF A NEW NUMERICAL MODEL OF DYNAMIC HARMONIC REGRESSION FOR THE FORECAST OF SELLING FUEL PRICE IN THE MOROCCAN PETROLEUM SECTOR

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Keywords: liberalization, forecast, time series model, dynamic harmonic regression, decision making.
Abstract: The liberalization of the petroleum sector in Morocco has a significant effect for petroleum product distributors. Since the beginning of December 2015, fuel prices are freely determined. This event presents many constraints affecting

the balance of the sector plus the competition among its economic players. As all fuel products are imported, we will be interested in the evolution by making forecasts of the price of fuels in the Moroccan market. In this context, our paper aims mainly to study the time series of diesel and gasoline in order to provide precise forecasts to the company and to respect the permissible error margin of 3%. To this end, the harmonic dynamic regression model through the proposed process approach yielded excellent forecasting results for the first quarter of 2017 with an average error margin of 1.617%. Compared to ARIMA model, the harmonic dynamic regression proves its strength manifested in the low rate of error. In addition, the assumption that the residuals are a Gaussian white noise has always been verified. The forecasts obtained are very crucial for managers to take good decisions at the strategic level.

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TECHNIQUE FOR ESTIMATION OF COSTS AND PRICES IN CONTRACTS FOR THE INTERNATIONAL SALE OF GOODS BASED ON INCOTERMS®

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Keywords: Settlement prices, settlement costs, Incoterms®, SMEs, international sale of goods.
Abstract: The settlement of costs and prices in international business is an essential aspect of the competitiveness of internationalized companies. In this way, the "International Commercial Terms" (Incoterms)® as rules for the involved parties to a contract of international sale of goods become strategic, not only to define the conditions of delivery of the goods but also to define the value of an export according to the point of delivery within the international physical distribution chain. This study presents a detailed example of the costs derived from an international sale and purchase process, considering different databases published on the Internet, and provides a technique to simulate the value of each Incoterm 2020 rule. The results indicate the estimated prices for an export case from Colombia to the United States for containerized cargo. It is concluded that this technique facilitates the planning of the international sale and purchase, allowing to know the export values for each Incoterm, besides presenting an innovative model adaptable for other goods.

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IMPROVING THE LEVEL OF PREDICTIVE MAINTENANCE MATURITY MATRIX IN INDUSTRIAL ENTERPRISE

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***Keywords*:** predictive maintenance, Predictive Maintenance Maturity Matrix, Industry 4.0, Logistics 4.0, case study.
Abstract: Predictive maintenance is a maintenance strategy that applies advanced statistical methods and artificial intelligence to determine the appropriate maintenance time. The article focuses on future recommendations for industry and logistics to achieve a higher level of predictive maintenance maturity, which requires real-time monitoring of the state of the company's machinery and equipment. The article's main objective is to propose recommendations to increase effectiveness by improving the predictive maintenance maturity matrix from the current level to a higher level in the industrial enterprise. The current state of maturity has been indicated using the modified model of predictive maintenance and following recommendations from the document Manual for companies for the introduction of artificial intelligence. Simultaneously within the analysis, a predictive maintenance simulation was performed on a selected production line, including essential machines and equipment. The study also identified the individual assumptions (processes, data, infrastructure, personnel, applications, organization) necessary to implement predictive maintenance successfully. The presented case study results contribute to understanding how individual assumptions can be obtained for predictive maintenance improvement and how innovative solutions in the context of Industry 4.0 and Logistics 4.0 can be achieved in enterprises.

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AN EMPIRICAL COMPARISON OF DRP AND DEMAND-DRIVEN DRP

(pages 195-205)

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Keywords: supply chain, distribution networks, Distribution Resource Planning, Demand Driven Distribution Resource Planning, demand variability.
Abstract: Companies are nowadays challenged to offer high service levels while minimising inventory costs in an ever-increasing competitive market. One of the keys is to manage and improve the product flow in the distribution network continuously. In this paper, Demand Driven Distribution Resource Planning (DDDRP) is a proposed model for product flow management in distribution networks. It allows to optimise the flow by managing customer demand fluctuations. A literature review about flow management policies is presented, and then a case study is provided to make a comparison of the DDDRP concept with conventional management methods such as Distribution Resource Planning (DRP). To achieve this comparison, a discrete event simulation (DES) is adopted to measure the effectiveness of each model regarding the demand fluctuations, using key performance indicators. The simulation gives empirical results and illustrates the interests and benefits of the DDDRP approach in terms of inventory costs and service levels. The originality of this document concerns the assessment of Demand-Driven Distribution as a new approach of management and opens up new opportunities for optimising inventory and product flow in distribution networks.

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SUPPLY CHAIN PERFORMANCE EVALUATION MODELS: A LITERATURE REVIEW

(pages 207-221)

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Keywords: supply chain performance, supply chain performance evaluation models, overall supply chain, performance evaluation, literature review.
Abstract: Our structured literature review reveals the current state-of-the-art supply chain performance evaluation models (SCPEMs) from the last 21 years of research. Seventy related papers from the 2000 to 2021 time period were found to contribute by using ISI and SCOPUS databases. This paper has classified SCPEMs in terms of focus area and the perspective considered (financial and non-financial). With the analysis, these models' applicability in today's business environment pinpointed the most usable models and their current shortcomings. Findings disclose current SCPEMs limitations and misalignments with the emerging disruptive technologies observed in today's supply chains. Given the findings, this study has highlighted the lack of overall supply chain performance evaluation and the failure to underline the underperforming decision criteria in the SC network. Therefore, to tackle these gaps, the authors have suggested visibility, leagility, collaboration, digitalization, sustainability, and integration as SCM characteristics to be considered in the future when developing a novel SCPEM. Finally, this study can be used as guidance for future studies.

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CAUSES AND EFFECTS OF SUPPLY CHAIN NERVOUSNESS: MENA CASE STUDY

(pages 223-235)

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Keywords: supply chain, nervousness, MENA, AHP, framework.
Abstract: As part of the global supply chain (SC), Middle East and North Africa (MENA) SC is subject to many disruptions and instability resulting in an unpredicted interference among decisions causing SC nervousness (SCN). Nervousness reduces the efficiency and negatively impact the overall SC performance. Nervousness greatly effect supply chain stability and resilience leading to an increase in costs and fluctuation of the relationships with suppliers as well as customers. This research explores the supply chain nervousness (SCN) in MENA region. An investigation of the existing literature and interviews with the experts used to identify factors related to nervousness in the SC. This study was

prompted by a lack of research depth to identify and investigate the main causes, effects, and measures, of SCN. A survey is used to analyze and asses the SCN in the region. A comprehensive framework of SCN in MENA region is presented and analyzed. The results identify the major sources, causes, and impact of SCN, and then arrange causes based on their impact. Also, the relative criticality of nervousness factors was assessed using the Delphi based analytical hierarchy process (AHP). Furthermore it investigated the factors and response strategies to mitigate the nervousness sources. Finally, a list of measures is proposed to reduce the SCN and improve competitiveness, effectiveness, and responsiveness. Identification and assessment of nervousness factors enables professionals to take appropriate mitigation strategies, help companies decide plans to reduce nervousness in their SCs, and lead to better decisions on future resilient supply chains.

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WAYS TO EFFECTIVELY ADDRESS PROBLEMS EXISTING IN THE URBAN PASSENGER TRANSPORT SYSTEM

(pages 237-243)

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Keywords: bus, efficiency, passenger traffic, urban transport, industry standard.
Abstract: At present, public transport needs to be managed using the different models, which will take into account health problems, passenger transport problems, refinement of technical parameters of buses and their adaptation to urban operating conditions, which would be one of the preventive measures in the context of combating the coronavirus pandemic. The article discusses the issues of optimizing the routeing scheme of buses and minibuses in the conditions of a three-level transport network in large cities. Measures for the performance of the city bus routes have been developed. It has been established that the qualification of a driver and the selection of urban passenger vehicles are central issues in terms of fuel efficiency and reducing the number of harmful substances in exhaust gases.