
ABSTRACTS

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Informal contracts' influence on shipping efficiency: a customer- perspective of package delivery agent

(pages 339-348)

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Keywords: courier services, package delivery agents, informal contract, trust.

Abstract: Understanding the role of informal agreements can help delivery services prioritize customer preferences, leading to improved service quality and customer satisfaction. Unfortunately, where there are gaps either on general understanding of communication stand in-between the different of failure and success. This qualitative research study delves into the dynamics of informal contracts between customers and package delivery agents, and their impact on the efficiency of the shipping process. The research aims to gain a deeper understanding of how these unwritten agreements affect various aspects of the delivery process from both the customer and delivery agent viewpoints. Through in-depth interviews and thematic analysis, this study sheds light on the nuances of these informal arrangements and their role in shaping the overall shipping experience. The study revealed that informal agreements play a significant role in package delivery experiences. Participants described unspoken arrangements formed through trust and effective communication. Adherence to these agreements positively influenced service efficiency, with prioritized deliveries and improved accuracy. However, deviations from agreements led to emotional reactions such as frustration and disappointment, impacting the perceived trustworthiness of the delivery service. Additionally, the study highlighted cultural variations in the adoption of informal agreements and the importance of clear communication in establishing and maintaining these arrangements.

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Sustainable public procurement for supply chain resilience and competitive advantage

(pages 349-360)

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Keywords: sustainable public procurement, resilient supply chains, supply chain disruptions, e-procurement, life cycle.

Abstract: Public procurement plays a crucial role in national economies, as it represents a significant share of public spending. Governments can thus use this considerable purchasing power to promote environmental sustainability, social responsibility, and economic efficiency, while encouraging the supplier market to innovate and adopt more sustainable

practices to remain competitive, and to generate more resilient supply chains. Given the interdisciplinary nature of the subject of sustainable public procurement (SPP), the documentation is abundant and diverse, hence the need for an updated literature review especially in the aftermath of the COVID-19 crisis period. This article consists of a systematic literature review focusing on articles with an empirical approach. The results reveal, among other things, 8 main research themes subdivided into 19 sub-themes, with a dominance of literature on the obstacles and incentives related to the implementation of SPP, while those concerning e-procurement and the analysis of the social life cycle remain relatively limited. The study also underscores the role of local economies and SMEs in public procurement strategies. It highlights a trend towards geographical diversification, indicating the global significance of SPP, with noticeable differences in adoption between developed and developing countries. The review calls for future research to focus on developing practical frameworks and tools for integrating sustainability more comprehensively in public procurement. The findings illuminate the pivotal role of SPP as a mechanism steering societies towards a sustainable, resilient, and equitable future, particularly in a post-pandemic world.

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Supply chain risk assessment using best worst method: a case study of agro-industry skipjack tuna in Ambon - Indonesia

(pages 361-371)

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Keywords: agro-industri, supply chain risk, best worst method, smoked skipjack, risk factor.

Abstract: One of the main issues in the agro-industry supply chain is identifying and ranking different risk factors to maintain business continuity. This study discusses the agro-food supply chain risk assessment for smoked skipjack tuna in Ambon. Related literature and expert interviews identify risk factors that arise along the supply chain. These risk factors are contained in internal risk, company external operational risk, and macro-level risk. This research aims to evaluate comprehensively the risk factors of the smoked skipjack agro-industry supply chain, which are a priority to be addressed. The decision-making framework uses the BWM (Best Worst Method) to determine each risk factor's relative weight, followed by a sensitivity analysis to determine how robust the outcome is. Experts pick the risk factor assessment, and then an optimization model is modelled to obtain the weight of each risk factor, which is calculated with the help of Lingo software. The findings show that three risk factors will be prioritized to be addressed out of the eleven risk factors assessed, namely "Quality of the final product," "Financial instability," and "degradation of fish populations." Sensitivity analysis was also carried out to see the overall robustness of the results achieved. The weight of the selected risk factor ("final product quality (R1c)") has its weight value changed from 0.1 to 0.9 with an increase of 0.1. These findings are expected to help smoked skipjack tuna agro-industry managers make decisions to reduce supply chain risks and better administration management to maintain the sustainability of their business processes.

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Market segment evaluation based on fuzzy tools

(pages 373-386)

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Keywords: market segment, fuzzy SAW method, fuzzy SBWM, expert linguistic evaluations, Porter's force assessment model.

Abstract: The paper suggests a hybrid model with simplified and extended schemes for evaluating market segments based on strategic diagnostics methods and fuzzy multi-criteria analysis tools. The developed model's novelty and originality consist of forming a system of evaluation criteria based on the GROT criteria of I. Ansoff and the five forces of the M. Porter model (and in the case of an extended calculation scheme – with their decomposition into sets of relevant sub-criteria) and the use of the latest Fuzzy SBWM method (Fuzzy Extension of Simplified Best-Worst Method) to determine their weighting factors. Expert linguistic evaluations on a defined 7-level term set, followed by their transformation into fuzzy numbers with triangular membership functions, are used to evaluate market segments for each identified criteria (sub-criteria). The Fuzzy SAW method determines fuzzy integral estimates of market segments based on these sub-criteria. A practical case of evaluating the confectionery market segments of Ukraine for the simplified calculation scheme is given. The systematic approach makes it possible to determine the attractiveness of market segments for forming strategic recommendations based on the application of portfolio analysis methods, for developing and implementing diversification and logistic strategies.

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Integrating machine learning and deep learning for enhanced supplier risk prediction

(pages 387-396)

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Keywords: supply chain risk management, machine learning, deep learning, risk prediction, supply chain.

Abstract: The importance of anticipating and preventing disruptions is underscored by the increased operational complexity and vulnerability caused by advancements in supply chain management (SCM). This has spurred interest in integrating machine learning (ML) and deep learning (DL) into supply chain risk management (SCRM). In this paper, we introduce a tailored method using ML and DL to improve SCRM by predicting supplier failures, thus boosting efficiency and resilience in SC operations. Our method involves five phases focused on classifying and predicting supplier failures in non-conforming deliveries. This involves forecasting failure quantities and estimating total disruption costs. Initially, data from an automotive company is selected, and appropriate potential features and algorithms are selected, performance metric aligns with case study objectives, facilitating method evaluation are used such as: Precision, recall, F1-score, and accuracy metrics assess classification models, while Mean Squared Error (MSE) is used for regression tasks. Finally, an experimental design optimizes models, assessing success rates of various algorithms and their parameters within the chosen feature space. Experimental results underscore the success of our methodology in model development. In the classification task, the Random Forest (RF) classifier achieved 86% accuracy. When combined with the Gradient Boosting classifier, the ensemble exhibited enhanced accuracy, highlighting the complementary strengths of both algorithms and

their synergistic impact, surpassing the performance of RF, Support Vector Regression (SVR), k-Nearest Neighbors (KNN), and Artificial Neural Network (ANN). Noteworthy is the performance in regression tasks, where Linear Regression, ANN, and RF Regressor displayed exceptionally low MSE compared to other models.

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A survey study on Industry 4.0 for Moroccan manufacturing

(pages 397-407)

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Keywords: Industry 4.0, survey, smart factory, technology implementation.

Abstract: In this article, a field study is conducted to analyze the state of enterprises in Morocco in the face of digitalization by studying large, small, and medium-sized enterprises. This study focuses mainly on researching the factors that influence their decision to adopt a digital strategy. Using the AHP multi-criterion method, a precise selection was made based on the opinions of experts in the field. To make this choice, a precise methodology was used: brainstorming and a weighted vote. An online survey was conducted, and 34 companies were interviewed to analyze the ways in which they are adopting digitalization, to present the most commonly used digital tools, and to study the impact, benefits, and obstacles of a digital strategy. A data analysis was applied by combining R with SPSS. The findings of this study show that Morocco is beginning to incorporate digitization into its practices, and more precisely, into the supply chain's operations, but that this use is still quite limited to certain tools and practices. They emphasize the underlying causes, highlight the benefits of digitization, and compare the levels of corporate maturity compared to digital. Six factors have been identified to influence this decision. This article contributes to an existing gap in empirical studies that highlight the integration of digital strategies, focusing on the case of Morocco. It provides useful data that can significantly improve management methods and encourage the integration of digital strategies, regardless of their size, making it a significant contribution to researchers and even industries.

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Location selection for logistics centre using PROMETHEE method

(pages 409-419)

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Keywords: logistics, PROMETHEE, AHP, automotive industry, location problem.

Abstract: Logistics and distribution centres are essential to the supply chains of many manufacturing and logistics companies. Efficiently locating logistic centres involves thorough search for optimal place, prioritizing proximity to suppliers and minimizing costs. Companies' management often solves the location problem of new halls, mostly to

minimise the associated costs. Such a problem is solved in the automotive industry as part of the launch of a new international project. The key factor for the decision of where to locate the logistics centre is the location of the suppliers, since material deliveries generate a large part of the project costs. The aim of this study is to define a methodology for the location of the logistics centre, considering several alternative locations and relevant criteria. The location alternatives and criteria are defined in terms of minimising project costs and sustainability elements. The problem is solved using the multi-criteria decision-making approach. First, the AHP method is used to assign weights to the criteria. Then the PROMETHEE method is applied to find a suitable location for the logistics centre and to perform a thorough sensitivity analysis. The sensitivity analysis is focused on the impact of values of weights on the solution. Consequently, the analysis proves the correctness of the selected alternative. Based on the case study, a general methodology for locating a logistics centre is proposed.

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Production and logistics 4.0 in the food industry in the Czech Republic

(pages 421-427)

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Keywords: automation, food chain, Industry 4.0, logistics, production.

Abstract: The food industry is the most important sector of the national economy of the Czech Republic, which significantly contributes to the fulfillment of fundamental macroeconomic aggregates such as gross domestic product, employment, exports and others. The food industry is currently facing pressure from customers for higher quality and safety while maintaining low prices. At the same time, however, they must ensure high safety and productivity of their production and logistics flows when there is a shortage of manpower. Another aspect is the sustainability of logistics and supply chains, i.e. the requirement for new materials, packaging and technologies enabling maximum processing and use of inputs. From this point of view, the application of Industry 4.0 elements to the food industry appears to be a necessary step for the company's competitiveness. The article summarizes the results of a questionnaire survey that took place in the period April-May 2023 through the Internet tool Survio. A structured questionnaire was sent to 206 food businesses in the Czech Republic. The enterprises were selected according to the database of the Ministry of Agriculture. 69 enterprises returned correctly completed questionnaires, which makes the return rate 33%. Questions were directed to the area of process stability as a result of two crises, the Russian-Ukrainian crisis and the Covid-19 pandemic. Further to the field of automation, digitization and robotization to evaluate the current state of involvement of food production in Industry 4.0.

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Managing the modification of digital marketing and logistics under the influence of artificial intelligence

(pages 429-440)

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Keywords: management, marketing, logistics, artificial intelligence.

Abstract: The purpose of the study is to develop a methodology for determining the modification of digital marketing and logistics and the peculiarities of their management under the influence of artificial intelligence. A theoretical and methodological analysis of existing research was carried out, relevance and purposefulness of the study is substantiated on the basis of scientific generalization. It has been proven that the functioning of modern business is inextricably linked with transformations, which characterized by the intense influence of artificial intelligence. Development trends have been identified and a classification of the main artificial intelligence technologies has developed, which necessitate the need for effective management of modifications in digital marketing and logistics of modern companies. Structured indicators of the dynamics of development of digital marketing and logistics pressure the influence of artificial intelligence. It is substantiated that the penetration of artificial intelligence into the management of digital marketing and logistics of modern companies leads to their modification, which is due to the automation and optimization of business processes. An economic and statistical analysis of the interdependence of trends in the development of digital marketing and trends in the contract logistics market for the Gulf Cooperation Council was carried out. The interdependence is determined and the main prospects for the development of digital marketing and logistics are argued in the context of the impact of artificial intelligence. The results have practical value and can be used to formulate a methodology for managing modifications in digital marketing and logistics of modern companies.

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Boosting customer loyalty through marketing distribution, customer experience management and customer relationship management

(pages 441-449)

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Keywords: marketing distribution, customer experience management, customer relationship management, customer loyalty.

Abstract: This study aims to analyze the effect of marketing distribution on customer experience management (CEM), customer relationship management (CRM), and customer loyalty. This study also analyzes the effect of CEM and CRM on customer loyalty. This study uses quantitative methods with a population of all BPRS (Sharia People's Financing Bank) customers in the Cirebon area, West Java. The sample in this study was taken through the purposive sampling method regarding sampling criteria tailored to the research objectives. From the sampling process, we obtained 185 respondents who met the criteria and became the research sample. Data were collected through the distribution of questionnaires and analyzed using a structural equation model with Smart-PLS 3. The analysis shows that marketing distribution positively affects customer experience management, customer relationship management and customer loyalty. Furthermore, customer experience management and customer relationship management are also proven to positively affect customer

loyalty. Conclusion: It is concluded that marketing distribution has an important role in improving CEM, CRM and customer loyalty. This research proves that the implementation of good marketing distribution can encourage consumer interest in the company's products and services and build customer loyalty.

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The role of distribution centres in the logistics infrastructure of Kazakhstan (pages 451-460)

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Keywords: warehouses, distribution centre, infrastructure, supply chain, logistics.

Abstract: Distribution centres play a key role in the supply chain and their insufficient number will entail supply chain disruptions — supply delays and problems, as well as lost profits. Currently, distribution centres in Kazakhstan are located only in large cities. However, the growth of e-commerce (from 11729.9 billion tenge to 15763.7 billion tenge in 2022 compared to 2020) determines the need to solve this problem. Our study establishes the dependence between the areas of distribution centres and the e-commerce volume. This analysis, unlike the existing ones, examines the effect of the growth of e-commerce volumes on the increasing number of distribution centres as a prerequisite for the development of the logistics infrastructure of Kazakhstan against the background of the increase in the volume of goods supplied from China in transit to Europe. The aim of the study was to analyse the role of distribution centres in the logistics infrastructure of Kazakhstan. We justify the need to increase the number of distribution centres due to the increase in both turnover in goods transit, wholesale, and retail trade. The introduction of distribution centres ensures the continuous movement of goods and strengthens the connection between suppliers and consumers. The emergence of new technologies and innovations, combined with favourable market conditions and political support, creates favourable conditions for the development of reliable distribution centres that can improve logistics efficiency and contribute to the overall economic development of Kazakhstan.

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Utilization of the intersection of ABC and XYZ analysis in stock planning in the warehouse by Covid period (pages 461-472)

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Keywords: mobility, warehouse, stock planning.

Abstract: The aim of this article is to find the most appropriate inventory storage strategies in a new warehouse according to the Covid period. Based on the company's analysis and preferences, we have concluded that the most suitable inventory storage strategy will be ABC, XYZ and penetration analysis according to which the inventory will be produced to the company's warehouse. The result of the paper is the intersection of these analyses. Based on the penetration analysis, we found that AAXX group has 27% of the product items. The CXX group of manufactured items has a high turnover, but accounts for only 1% of the total items. The AA category has a low turnover but accounts for only 0.63% of the product items. As a result of the penetration analysis, we concluded that the categories AAXX, AAX, AXX, AX and BXX are suitable to be produced in large quantity in stock. For categories AAY, AY, BX and BY, it is recommended to plan the production of items for stock with caution and not to produce them in such large quantities. The regularity of the analysis of these methods is very important. The intersection of ABC and XYZ analyses indicates the regularity of applying these methods due to the existence of excess or non-replenishable stocks.

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Mitigating data inaccuracy and supply chain challenges in Western Romania's automotive industry

(pages 473-483)

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Keywords: data accuracy, operational performance, logistics, supply chain management.

Abstract: The purpose of this paper was to emphasize the importance of data accuracy within internal logistics systems and their extended influence on supply chains in automotive industry through 6-month multiple case studies conducted on 3 first tier original equipment manufacturers (OEM) based in Western Romania. The study investigates the most common causes of data inaccuracies among automotive suppliers and their approaches to reduce consequential supply chain issues and be more agile. Data collection and analysis revealed that main issues arise due to ordering quantities mismatching actual customer demand, a wide range of order lot sizes, lead times and delivery reliability concerns and the reluctance to shift away from mainstream cost-effectiveness and towards strategic added value thinking. These issues sourced significant other related operational challenges such as excessive inventory, short-term stockouts and subsequent express shipping services or product-related inconveniences (quality and capacity levels, contracted volumes and dedicated lines). The paper sources different logistics and supply chain strategies used by the 3 OEMs, their features and operational performance, as well as their overall effectiveness, which can be applied by other automotive industry suppliers to improve own results. Introducing more reliable real-time data collection tools and performance metrics has started hauling more focus towards solving these prevalent issues with some ongoing improvement projects showing up to 25% better results. For one of the 3 OEMs introducing a new warehouse management system has already sourced an overall quality increase (5 percentage points) due to a 60% higher utilization of its production equipment.

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Increasing the efficiency of logistics for the area of storage and picking of special materials

(pages 485-493)

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Keywords: logistics, efficiency, storage, picking.

Abstract: The article deals with increasing the efficiency of logistics flows for the area of storage and picking. The aim of the processed study was to focus on the analysis of logistics activities and processes, the state of supply and inventory management. An assessment of the effectiveness of the introduced information system at the selected warehouse was carried out, which led to changes in a positive direction in the very process of storage and management of special products. The study presents the design of variants, the selection of the optimal one using selected decision-making methods and the introduction of a new warehouse system, which leads to the efficiency of the entire storage process in the NPI (New Product Introduction) warehouse. The output of the study is also the implementation of the selected variant into industrial practice, which is declared by the elaborated project of the introduction of the selected variant. The article is a contribution related to the process of implementing a warehouse and picking system for specialized material items.

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Optimizing the order picking and delivery process to the final recipient

(pages 495-503)

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Keywords: orders, picking, management, transport.

Abstract: The aim of this study is to analyse and evaluate the order picking process and the transport of products to customers, taking into account the specific characteristics and potential of small and medium-sized industrial enterprises. Scientific standards and selected indicators for measuring the efficiency and quality of transport and order picking processes were used to achieve the intended objectives. The research was conducted in a small, family-owned manufacturing and trading company specialising in the production and sale of wrought iron finishing elements and fences. The analysis covered both internal and external transport processes. It was shown that the order picking process in the studied company is largely based on manual procedures, which, despite high precision, generates time-consuming activities related to the movement of warehouse employees. External transport efficiency indicators showed high efficiency and appropriate use of transport resources. The high quality of deliveries, as measured by on-time and reliability indicators, confirms customer satisfaction. The study was conducted in one company, which is a limitation. Future studies should include more companies from the same sector. Proposed improvements need to be verified sometime after implementation and solutions resulting from data analysis can help SMEs in similar industries to improve their logistics processes. The work brings a new approach to the analysis of order picking and transport processes in the context of SMEs, providing practical solutions and indicating areas for further research. It is aimed at logistics managers, researchers and practitioners interested in optimising logistics processes in the industrial sector.
