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**PANDÉMIA – FENNTARTHATÓ GAZDÁLKODÁS
– KÖRNYEZETTUDATOSSÁG / PANDEMIC
– SUSTAINABLE MANAGEMENT – ENVIRONMENTAL AWARENESS
KONFERENCIAKÖTET / Conference Proceedings**

Szerkesztette / Edited by: OBÁDOVICS Csilla, RESPERGER Richárd, SZÉLES Zsuzsanna

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TARTALOMJEGYZÉK / CONTENTS

Plenáris előadások Plenary Lectures

| | |
|---|-----|
| Sustainability and Higher Education from a Three-dimensional Perspective <i>Dr. Rita LUKÁCS</i> | 10 |
| A jövő vezetőinek társadalmi felelősségvállalási attitűd vizsgálata <i>Examination of Future Leaders' Social Responsibility Attitude</i> <i>Dr. NÉMETH Patrícia – KASZA Lajos</i> | 20 |
| 1. szekció: Versenyképesség és fenntartható gazdálkodás Session 1: Competitiveness and Sustainable Management | |
| Challenges and Chances for the Social and Economic Development of a Russian Border Region (the Case of the Samara Region) <i>Prof. Dr. Galina KHMELEVA – Dr. Marina KURNIKOVA</i> | 33 |
| Soy Supply and Organic Requirements for more Authenticity <i>Dr. Caspar VON DER CRONE – Prof. Dr. Nicole MAU</i> | 41 |
| The Impact of Artificial Intelligence on Leadership in the Corona Crisis <i>Thomas SOLDERITS</i> | 51 |
| Environmental Sustainability as a Strategic Reason for the Investment in Industry 4.0: The Difference between SMEs and Large Companies <i>Mohamed EL MERROUN</i> | 63 |
| Supply Chain Resilience: Lessons Learned during the COVID-19 Outbreak and its Implications for the Future <i>Johannes LITZENBURGER – Prof. Dr. Nicole MAU – Prof. Dr. Markus MAU</i> | 68 |
| 2. szekció: Turizmus, marketing Session 2: Tourism, Marketing | |
| Felelős márkkommunikáció a koronavírus idején <i>Responsible Brand Communication during the Coronavirus Pandemic Situation</i> <i>Dr. habil. PAPP-VÁRY Árpád – Dr. LUKÁCS Rita</i> | 74 |
| A digitális transzformáció megjelenése a divatipari értékesítési gyakorlatokban <i>The Appearance of the Digital Transformation in Sales Practices of the Fashion Industry</i> <i>VIZI Noémi</i> | 84 |
| A turizmus fenntarthatósága a pandémia után <i>Sustainability of Tourism after the Pandemic</i> <i>Dr. JANDALA Csilla – GÁL Pál Zoltán – Dr. BÖRÖCZ Lajos – DARÁZS Fanni</i> | 96 |
| Az „Alföld Slow térség” versenyképességének vizsgálata <i>Analysis of the Competitiveness of the „Alföld Slow Region”</i> <i>SZÖKE Tünde Mónika</i> | 107 |
| Aktív lovasturizmus Magyarországon és a Fertő-tájón <i>Active Equestrian Tourism in Hungary and at Fertő Landscape</i> <i>Prof. Dr. OBÁDOVICS Csilla</i> | 119 |

3. szekció: Fenntarthatóság, környezettudatosság

Session 3: Sustainability, Environmental Awareness

| | |
|---|-----|
| A vállalkozói attitűd vizsgálata bibliometriai módszer segítségével <i>Examining the Entrepreneurial Attitude Composite Word using Bibliometrics</i> Dr. FEHÉR Helga – Dr. KOZMA Dorottya Edina | 132 |
| A fenntarthatóság környezeti elemeinek megjelenése a hazai nagyvállalatok gyakorlatában <i>The Emergence of Environmental Elements of Sustainability in the Practice of Large Hungarian Companies</i> Dr. KOZMA Dorottya Edina – BOSNYÁK-SIMON Nikolett | 149 |
| Járvány, környezettudatosság, fenntarthatóság – mémelméleti áttekintéssel <i>Pandemic, Environmental Awareness, Sustainability – with a Meme Theory Overview</i> Dr. DŐRY István | 165 |
| A home office és a szervezeti kultúra egymásra gyakorolt hatásai a magyarországi multinacionális vállalatoknál – Kutatási tervezet <i>Interactions between Home Office and Organizational Culture at Hungarian Multinational Companies – Research Project</i> IONESCU Astrid | 168 |
| A könyvvizsgálók személyisége <i>The Personality of a Good Auditor</i> Dr. NEDELKA Erzsébet – Dr. HEGEDŰS Mihály..... | 177 |
| A pandémia hatásainak kommunikációja a Budapesti Értéktőzsdén jegyzett vállalatoknál <i>Communication of the Effects of the Pandemic by Companies Listed on the Budapest Stock Exchange</i> Dr. BARTÓK István János | 185 |

4. szekció: Vállalati döntések a koronavírus-járvány idején

Session 4: Corporate Decisions During the Coronavirus Pandemic

| | |
|--|-----|
| Corporate Strategy in a Disruptive Economic Environment – Foremost A Strategic Alignment Topic? Thorsten SCHMUDE | 193 |
| Sustainability and EU Law. Latest Tendencies in the Field of Public Participation in Environmental Matters Dr. Ágnes VÁRADI | 207 |
| How to Recover the Labor Force of the Tourism Industry after the Global Health Crisis? – A Study in Vietnam Thị Phượng Thảo HOÀNG..... | 215 |
| The Impact of the Corona Pandemic on the Project Management Process in Jordan Noor Ahmad Mahmood ALKHUDIERAT | 228 |

5. szekció: Versenyképesség és fenntartható gazdálkodás

Session 5: Competitiveness and Sustainable Management

| | |
|--|-----|
| Is Urban Farming the Green Economy of the Future?! Investigation of the Sustainable Management of a Hungarian Startup Enterprise Zsuzsanna VARGA – Dr. habil. Etelka KATITS – Katinka MAGYARI – Dr. Ildikó PALÁNYI – Dr. Éva SZALKA | 237 |
|--|-----|

| | |
|--|-----|
| Szakirodalmi áttekintés az amazóniai indián chagrák – óshonos agrárerdészeti rendszerek – ökológiai, társadalmi és gazdasági jelentőségéről <i>The Role of Indigenous Agroforestry Systems in the Conservation of the Amazon</i> | |
| <i>LENTI Attila</i> | 252 |
| Smart Development with Digital Intelligent Cities in Cross-Border Regions <i>Tamás GYULAI – Prof. univ. Dr. Mariana NAGY – Raluca CIBU-BUZAC</i> | 264 |
| Explaining Correlations of Digital Transformation and Adaptiveness in B2B Sales in Relation to Resilience <i>Günther MAIER</i> | 278 |
| Investor Strategy Decisions in Case of Project Implementation <i>Attila LEGOZA</i> | 289 |
| Lean Thinking Strategy <i>Peter IMRICKSKO</i> | 296 |
| The Impact of Working Capital Management on Firm Profitability: Evidence from Pakistan <i>Ali Akbar SOHAIL – Abdul QUDDUS</i> | 303 |

6. szekció: Fenntarthatóság, környezettudatosság – marketing Session 6: Sustainability, Environmental Awareness – Marketing

| | |
|--|-----|
| Társadalmi hatások és MI! <i>Social Impacts and AI!</i> | |
| <i>Dr. KŐKUTI Tamás</i> | 312 |
| A koronavírus járvány hatása a globális klímaváltozásra <i>Impact of the Coronavirus Epidemic on Global Climate Change</i> | |
| <i>NEUMANNÉ VIRÁG Ildikó – Dr. KOZMA Dorottya Edina – Dr. MOLNÁRNÉ dr. BARNA Katalin</i> | 325 |
| A márkaélmény és a tartalommarketing kapcsolata <i>The Relationship between Brand Experience and Content Marketing</i> | |
| <i>HAJDU Gergő</i> | 341 |

7. szekció: Fenntartható pénzügyek Session 7: Sustainable Finances

| | |
|--|-----|
| A hazai biztosítási piac a számok tükrében: díjbevétel, szerződésszám és foglalkoztatottak <i>The Domestic Insurance Market in the Light of the Figures: Premium Income, Contract Number and Employees</i> | |
| <i>EKE Zsolt</i> | 359 |
| A pandémia hatásainak módszertani kérdései a nyugdíjbiztonságra <i>The Methodological Issues of the Effects of the Pandemic on Pension Security</i> | |
| <i>SZABÓ Zsolt Mihály</i> | 366 |
| A sikeres fordulatkezelés záloga – a pénzügyi turnaround controlling rendszer alkalmzása a magyar cégvilágban <i>Connecting the Turnaround to Success – the Application of Financial Turnaround Controlling in the Hungarian Business World</i> | |
| <i>Dr. habil. KATITS Etelka – MAGYARI Katinka – VARGA Zsuzsanna</i> | 379 |
| Gördülékeny tervezésű fenntartható vagyonkezelés hosszú- és rövid távú empirikus ütköztető analízise, a legfrissebb kutatási eredmények függvényében <i>Rolling Planned Sustainable Asset Management, Long-term and Short-term Empirical Collision Analysis Depending on the Latest Research Results</i> | |
| <i>Dr. CZIRÁKI Gábor</i> | 395 |

8. szekció: Versenyképesség – munkaerőpiac

Session 8: Competitiveness – Labour Market

Agrár vállalkozások jövedelmezőségét befolyásoló tényezők és az innováció további kutatási lehetőségei

Factors Affecting the Profitability of Agricultural Enterprises and Further Research Opportunities for Onnovation

ANGYAL Viktória – VAJAI Balázs 407

A hatékony ellátási lánc megvalósulásához szükséges kompetenciák hallgatói és munkaerőpiaci szemszögből

Competencies Required for the Implementation of an Efficient Supply Chain from the Perspectives of Students and the Labour Market

MUNKÁCSI Adrienn 420

Versenyképesség madártávlatból: globális kihívások és EU-válaszok a XXI. században

Competitiveness from a Bird's Eye View: Global Challenges and EU Responses in the 21st Century

Dr. SZEMPLÉR Tamás 442

Hajlékonyfalú csomagolóanyagok struktúrájának elemzése flexográfiai matt lakkozási technológia esetén

Analysis of the Matt Lacquering Structure of Flexible-walled Packaging Materials in the Case of Flexographic Printing Technology

VÁRZA Ferenc – Dr. habil. HORVÁTH Csaba – JOÓBNÉ dr. PREKLET Edina 448

9. szekció: Poszter-előadások

Session 9: Poster Presentations

Egészségügyi innovációk Magyarországon – startup aspektus

Healthcare Innovations in Hungary – from the Point of View of Startups

VITÉZ-DURGULA Judit 455

Modeling the Customs and Logistics Framework of International Integration Processes

Prof. Dr. Roman FEDORENKO 471

A faiparban foglalkoztatottak motivációjának fenntartása a pandémia árnyékában

How to Keep Maintaining the Motivation of People Working in Wood Industry during Coronavirus

NÉMETH Miklós – Dr. TAKÁTS Alexandra 476

Modeling the Customs and Logistics Framework of International Integration Processes¹

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Abstract

The modeling process allowed to reveal specific problems that prevent the active inclusion of regional businesses in international supply chains. The most important element uniting all these problems is the need for the formation and subsequent development of a modern customs and logistics framework for the region's foreign trade activities. The key part of this framework is the regional transport and logistics network. We have identified the main factors influencing the development of the transport and logistics network, which were divided into three groups – infrastructure, transport, and market. The composition of the transport and logistics network can be represented as a model containing a set of a certain number of logistics objects located on a certain number of sections of the transport network.

Keywords: foreign trade, customs and logistics support, transport, integration

JEL Codes: F02, F17

1. Introduction

Modern conditions for the development of the world economy, characterized by a high degree of integration, lead to a noticeable increase in the role and importance of foreign economic trade for the national economy. In the context of growing international market of goods, special attention is paid to the organization of logistics services for foreign trade. These services are designed to reduce the overall cost of moving goods. The World Bank annually calculates the Logistics Performance Index, the structural element of which is the indicator of the level of customs services. Thus, we can say that the customs administration of foreign trade flows of goods is a key element of logistics services for integration processes that are impossible without the activation of export-import supplies. The unification of customs administration and logistics services is carried out through the formation and subsequent development of the customs and logistics infrastructure.

The importance of the development of customs and logistics infrastructure is due to the ever-increasing role of global supply chains in the economic development of certain world regions. Participation in the world trading system is becoming necessary both to ensure the flow of raw materials and technologies for the development of its own economy, and for the successful sale of goods created with the help of existing local economic and geographical advantages on the world market. The success of the inclusion of the country and its certain regions depends on the local customs and logistics infrastructure level of development. The role of customs and logistics infrastructure in integration processes is high as it ensures the efficient movement of export-import trade flows.

2. Literature Review

A fairly large number of modern publications by foreign researchers both in the EU (Šakalys–Batarliene, 2017) and in the Asia-Pacific countries (Sio et al., 2017) are devoted to the development of international transport corridors. F. Gunter et al. (2017) noted the importance of

¹ The reported study was funded by RFBR and FRLC according to the research project № 19-510-23001.

modernizing the transport infrastructure of the MTC for its development, R. Liao (2017) pointed out the urgency of the problem of improving customs escort of goods passing through the corridor.

In modern conditions of integration processes in the world economy, special importance is given to the transport sector (Komov, 2019). The need to develop international transport corridors and the active participation of the state in creating conditions for their improvement has been repeatedly argued by researchers (Tsvetkov et al., 2014; Chizhkov, 2015; Fedorenko 2019). At the same time, considerable attention is traditionally paid to the problems of modernizing the existing transport and logistics infrastructure (Chibukhchyan, 2016).

In international science and practice, it is noted that ensuring sustainable economic growth of the country is one of the important functional imperatives of the activities of the customs authorities of any state. In the document of the World Customs Organization "Customs in the XXI century: enhancing growth and development through trade facilitation and border security", the global mission of the institution of customs is defined as the development and application of an integrated set of measures and procedures that ensure increased protection and security, effective trade support, revenue collection to state budgets (WCO, 2008).

Scientists dealing with the development of customs services and its importance in organizing foreign economic activity, indicate as an important task of customs services "simplification and harmonization of international trade procedures". In this case, the procedures of international trade are understood as "activities, methods and formalities associated with the collection, presentation, transmission and processing of data necessary for the movement of goods in international trade." It should be noted that trade facilitation also encompasses improving transport infrastructure, reducing corruption, reducing customs tariffs, and eliminating non-tariff barriers to trade (Grainger, 2008).

Simplification of customs procedures along with the development of a modern logistics infrastructure ensures the possibility of using just-in-time deliveries in the course of foreign economic activity, which is so much in demand today in international business. It has been calculated that every day of delay in delivery results in an increase in the cost of manufactured goods by about 0.8%. According to the Organization for Economic Cooperation and Development (OECD), a 1% reduction in transaction costs in foreign economic activity will provide a global profit of \$ 43 billion (Sandford, 2010). At the same time, the impact of the level of costs on the level of imports and exports of an individual country is also quite large. Thus, according to a recent study published in the International Journal of International Trade and Economic Development, a 10% reduction in the cost of importing (exporting) leads to an increase in imports (exports) by about 5% (Hoekman, 2010).

Many developing countries are paying serious attention to reforming the customs administration process to simplify procedures and facilitate international trade. These initiatives are also supported at the level of international organizations.

3. Results

In modern conditions of economy globalization, the importance of the logistic approach to the organization of foreign economic activity is noticeably growing. The characteristic feature of it is the need to comply with the rules and procedures enshrined in the relevant regulatory legal acts of customs legislation. At the same time, customs services are an integral part of the successful formation of logistics chains in foreign economic activity. The combination of such chains forms the customs and logistics framework of foreign economic activity.

The customs and logistics framework is the basis for the movement of foreign trade flow of goods, which unites the movement of export and import goods. During the movement of this stream, the customs border is crossed, which requires customs processing in accordance with the terms of delivery. As part of the logistics component of customs activities, the main checkpoints, financial-analytical, information-analytical and tariff-regulating functions of the customs authorities are integrated with their simultaneous linking with the interests of enterprises

participating in foreign economic activity. The acceleration of the movement of the foreign trade flow, uniting individual states, leads to the intensification of integration processes based on economic interaction.

The main goal of the formation and development of the customs and logistics framework of integration processes is to ensure a high degree of consistency of material, financial and information flows by optimizing the technology for moving goods and vehicles across the customs border. The result of achieving this goal should be the minimization of the financial and time costs of exporters and importers, achieved without any violation of all applicable requirements of customs regulation.

The customs and logistics framework is a complex structured, organizationally integral economic system that includes a sequence of links closely interconnected in a single process of managing foreign trade flows. Moreover, in this system, all the individual elements differ both in goals and in the nature of the activity. The functioning of these systems ensures the harmonization of the multidirectional interests of business, state and regions. A schematic diagram of the customs and logistics framework of integration processes is shown in *Figure 1*.

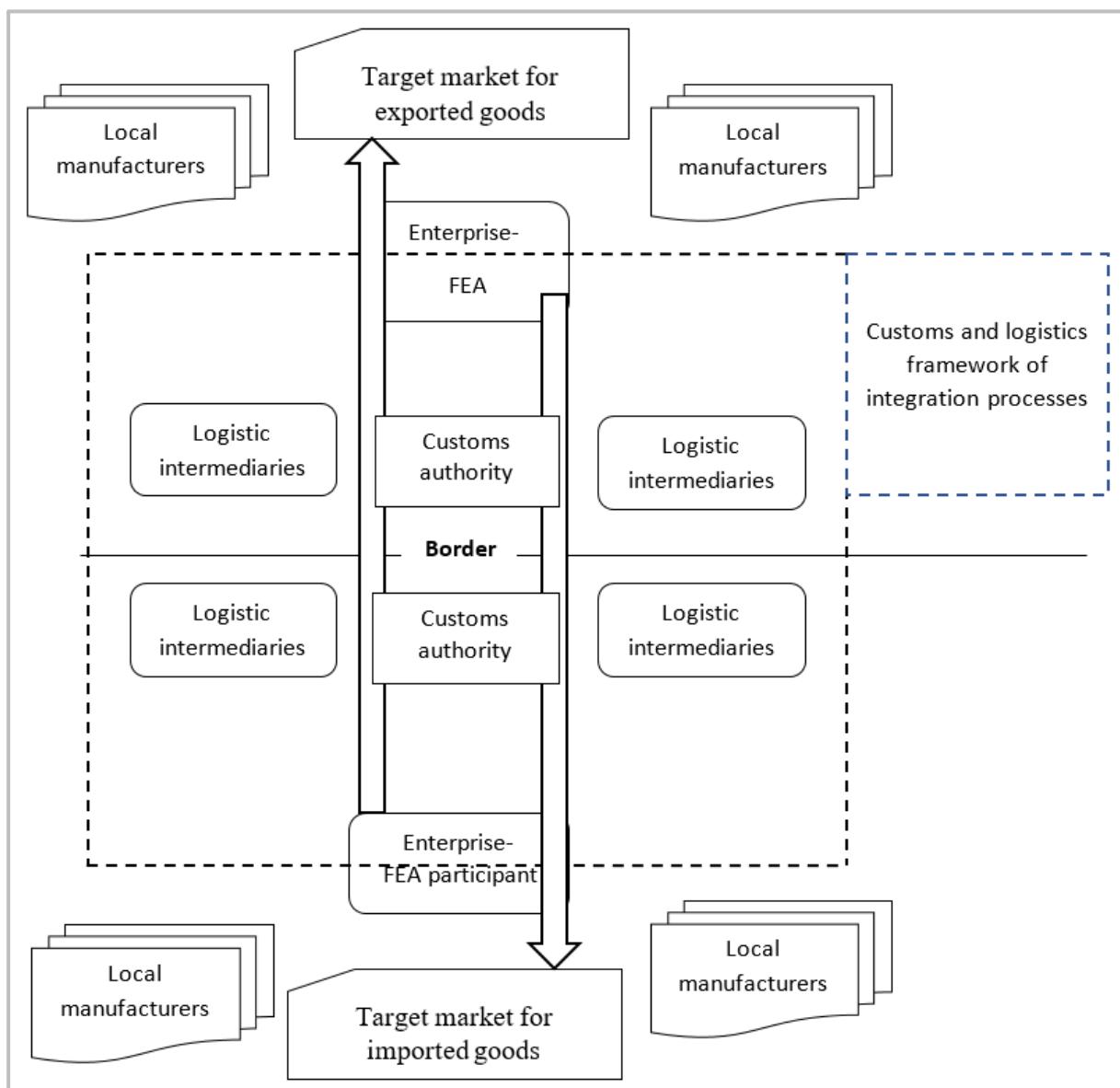


Figure 1: Schematic diagram of the customs and logistics framework of integration processes

Source: Complied by the author

Figure 1 shows a model of the customs and logistics framework for the integration process of two neighboring states. The customs and logistic framework in the figure is indicated by a contour uniting the customs authorities located at the border and logistic intermediaries participating in the export-import movement of goods. Enterprises – foreign economic activity (FEA) participants, due to entry into the customs and logistics framework, get the opportunity to enter target markets for exported and imported goods. The potential for further development of the customs and logistics framework for integration processes depends both on the level of customs and logistics services and on the level of competitiveness of local manufacturers.

The parametric structure of the customs and logistics framework of integration can be described by the mathematical expression of a number of significant characteristics. The formalized model of the structure of the customs and logistics framework (W_{CL}) in the general modular-block form looks as follows:

$$W_{CL} = \{W_{adm}|W_{log}\} \quad (1)$$

W_{adm} – administrative service module. This is a set of customs administrative procedures, the implementation of which is necessary in the course of the movement of export-import flows of goods;

W_{log} – logistics service module. This is a set of logistics operations performed during the movement of export-import flows.

A detailed model of the structure of the customs and logistics framework is as follows:

$$W_{CL} = \{W_{doc}; W_{bc}; W_{tran}; W_{war}; W_{ser}\} \quad (2)$$

W_{doc} – customs clearance costs module;

W_{bc} – costs module for passing border and customs control;

W_{tran} – transportation costs module;

W_{war} – warehouse costs module;

W_{ser} – module of costs for additional logistics services.

The process of formation and subsequent development of the customs and logistics framework of integration processes involves the assessment of its operational efficiency. Improving the efficiency of customs and logistics support of integration processes leads to an increase in the volume of export-import operations (W_{FT}). The mathematical expression of the feasibility assessment indicator (FA) for the modernization of the customs and logistics framework is as follows:

$$FA = \begin{cases} W_{adm} \rightarrow min \\ W_{log} \rightarrow min \\ W_{FT} \rightarrow max \end{cases} \quad (3)$$

Optimal development of the customs and logistics framework includes a reduction in administrative and logistics costs of participants in foreign economic activity, which results in an increase in the volume of foreign trade turnover.

4. Conclusion

Thus, this article presents a conceptual model of the customs and logistics framework of integration processes. The successful development of customs and logistics services for export trade flows increases the chances of local enterprises entering the international market and contributes to the successful integration of regions into the system of world economic relations.

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