PORT OF RIJEKA, GATEWAY TO THE BALTIC - ADRIATIC CORE NETWORK CORRIDOR

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ABOUT CONFERENCE

The International Multidisciplinary Conference on Sea, Traffic and Logistics 2017, organised by the Port of Rijeka Authority and the Faculty of Maritime Studies in Rijeka, was held at the Hotel Milenij in Opatija from 20th to 22nd November 2017. The central topic of the conference was 'Port of Rijeka as the gateway to the Baltic-Adriatic Corridor'.

The organisers gathered a number of speakers from the academic community, as well as businesspersons from the countries along the Baltic-Adriatic Corridor, who are involved in the shipping, transport and logistics industries, for the plenary sessions and panel discussions that took place during the three-day conference.

The conference focuses on showcasing new options for the Port of Rijeka and its prominent position within the Baltic-Adriatic Corridor. The scholars and businesspersons that had been invited to Opatija discussed the potential of this maritime transport route and its advantages compared to other traffic routes. Special emphasis was placed on strengthening the competitiveness of the Baltic-Adriatic Corridor through the cooperation of the northern Adriatic ports.

The science track of the conference was centred on topical issues and debates pertaining to the challenges of adapting business operations to the European Digital Single Market, as well as the imperative for constant innovation in the traffic, transport and logistics industries.

The findings brought forth by scientific research, particularly those applicable to the field of industry, and the opportunity to become familiar with examples of good practice allowed the participants to gain insight into the latest technological and business trends, as well as state-of-the-art technology. In the increasingly demanding business and the environment of international cooperation, possessing a high degree of knowledge becomes a strategic advantage for all the stakeholders whose goal is to develop and maintain the competitiveness of the corridor and its surrounding regions and countries.
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- Assist. Prof. Vlado Frančić, Ph.D., Croatia
- Saša Aksentijević, Ph.D., Croatia
- Nina Perko, Ph.D., Croatia
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Challenges of ICT Management in offshore construction projects

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Abstract:

Offshore construction projects are typically very difficult and complex: they are situated in diverse and remote geographical areas where support cannot be easily guaranteed. Network communication is achieved using diverse technical solutions aiming to optimize cost while guaranteeing quality of service for users. Users are also heterogeneous and comprised of various clients, subcontractors, third parties and internal users, so ICT services need to be provided to all of them while keeping logical and sometimes physical separation and ensuring information security. Construction projects are usually fast-track projects, which imposes additional difficulties on ICT planning. Cooperating teams are usually multinational and work in rotational manner. Finally, a fleet of various vessels (pipe laying vessels, survey vessels, diving support vessels, crane vessels barges, flotels and other) is commonly used in execution of such projects, which further complicates delivery of ICT services. In this presentation, some real challenges in management of ICT services in two offshore projects in Caspian Sea and Adriatic Sea will be described in form of case studies with methods undertaken to remedy them and ensure uninterrupted ICT service delivery and thus support successful completion of underlying offshore projects.

Key words:

offshore, construction, ICT
Advantages and Perspectives of North Adriatic Ports and BAC for Sustainable European Regional Development

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Abstract

The presentation highlights the historical events important for North Adriatic ports development during the last decades and points out the comparative advantages of the North Adriatic ports versus North European ports for Central Europe (Baltic-Adriatic corridor countries). Expected growth of central European market transport demand by 2030 and consequent growth potential of throughput through North Adriatic ports is estimated.

The Baltic-Adriatic corridor include also corridor related ports. The analysis of Baltic-Adriatic corridor transport performance shows that only 28% out of 530 million tons of traded goods of the landlocked countries (Austria, Czech Republic, Slovakia) in 2015 was transshipped through one of the Baltic-Adriatic corridor seaports, which shows great growth potential for Baltic-Adriatic corridor seaports in future.

The presentation concludes that regional development requires continuous development of the region related transport infrastructure. Baltic-Adriatic corridor is of crucial importance for Central Europe. For a potential increase of sustainable transport on the corridor adequate pull/push transport policy measures, introduction of innovative intermodal technologies and constant use of cost/time corridor performance indicators for improvement of sustainable transport are suggested.

Keywords

North Adriatic ports; North European ports; Baltic-Adriatic corridor; transport demand growth estimation; policy measures; sustainability; corridor transport performance.

References


Re-shaping the Logistics Service Industry: ICT and Sustainability Innovation Challenges

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Abstract

It is widely recognized that innovation is a key ingredient in the business success as it provides a number of benefits including the achievement of sustainable competitive advantage and reducing pressures coming from competitors [1]. Traditionally, the concept of innovation has mainly been analysed in the context of technology and manufacturing environments, while the impact of innovation in services organisations was underestimated [2] as in the case of the logistics service industry [3].

Over the last few years, innovation in logistics services attracted the attention of scholars and practitioners as the supply chain role of third-party logistics providers (3PLs) evolved substantially shifting from executing operational and repetitive activities toward a more complex supply chain orchestration model. Innovative pressures in different areas such as ICT and environmental sustainability have spurred the evolution of this model. The result of such pressures have produced the continuous expansion in the range of services offered by 3PLs especially more technologically sophisticated [4] and green services [5].

The main aim of this presentation is to discuss how 3PLs are reacting to innovative pressures in the area of information technology and environmental sustainability. The concept of logistics innovation is analysed and used to describe the evolving service innovation process of 3PLs in the supply chain. The diffusion of ICT innovation and the importance of the green dimension in the strategy of 3PLs is analysed on the basis of recent research. Finally, managerial implications and future research avenues are discussed.

Keywords

Logistics innovation; Third-party logistics providers; Information technology and Environmental sustainability.

References


Ericsson vision of smart transport: Get the full picture

Krešimir Vidović

Abstract

Transport plays a vital role in society and the importance of its role will increase even more in the future. Once real-time data from vehicles, infrastructure and people is given the opportunity to interrelate, our everyday lives will improve radically. To a great extent, the industry is already connected but in silos. The lack of standardization and a complex environment forces all stakeholders, including road authorities and industry players to rely on limited sets of information, from a small number of sources. New data sources will be crucial for providing drivers, automated vehicles and the general public with information that will help them avoid potentially dangerous road conditions, road construction, traffic congestion and emergency situations. When traffic and road information will be able interact, i.e., when applications and data can be combined in a secure and trustworthy manner, it is possible to proactively deliver the right information to the right stakeholders. This will give us a more efficient and sustainable urban environment with a new range of digital services. Ericsson vision of smart transport systems as a part of Smart Cities and Ericsson solution is designed with the aim of improving the quality of life of citizens by establishing a high-quality solution for transport problems in urban agglomeration. The solution is following the latest initiatives for promotion and encouragement of sustainable, clean and energy-efficient traffic operations. Goal is establishment of a system that will allow the creation of new services in the field of urban mobility system in the urban environment, using available information available from the transport network, and by utilizing data aggregation platform and cloud based hub for integration of service providers, stakeholders, authorities, things and people. The Ericsson vision is fully aligned to the philosophy of the Internet of Things, therefore proposed solution will be able to use data from various sources, and in the same time solution in the cloud will allow the provision of service to all interested stakeholders.

Keywords

smart transport, transport cloud, urban mobility, transport management

References


Cloud computing - digital transformation of Croatian seaports

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Abstract

The overall concept of a Smart Port is to become linked not only locally and regionally but also globally. Croatian seaports are currently attempting to develop an integral and efficient Port Community System, while Ministry of the Sea, Transport and Infrastructure is developing the Maritime National Single Window. Although various ICT systems currently exist among the seaport stakeholders, Croatian seaports are still very much away from the digital transformation of their business. There is no coherence between existing private heterogeneous systems and individual government “Single Windows”, and the majority of those systems are insufficiently user oriented.

Cloud computing has the potential to become the most dominant user oriented technology platform in seaport business in the coming years. Cloud based Port Community System could prove to be a key enabler of digital transformation of seaport business. The subject of this research is the importance and implication of integration of Cloud solutions in the development of Port Community Systems in Croatian seaports. Main implications of cloud solutions integration in Port Community Systems in Croatian seaports will be analyzed and pointed out, and potential benefits of Cloud solution integration will be determined.

Keywords

Cloud computing, user oriented technology, digital transformation, Single Window, Croatian seaports, Port of Rijeka
Streamlining the transport process via electronic transaction platforms

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Abstract:

Planning, organizing, contracting (operational and financial), execution and tracking of transport is generally realized and supervised by the use of multiple types of auxiliary tools, with one of the most important tools being the software support. A specialized software category - Transportation Management Systems (TMS) enables efficient planning and organizing of transport, tracking goods from origin to destination, and the optimization of all related procedures. The possibility of timely collection of quality information in all transport steps is of paramount importance in the planning and organization of transport, and the transport of goods itself.

The planning and organization of transport involves multiple actors of various profiles (public administration, sea shipping companies, carriers (road, rail), insurers, freight forwarders, port terminals, etc.). The role of TMS software is the integration and processing of data collected from the information systems of the transport participants, as well as distribution of information from the TMS system to the IT systems of other actors involved in the transport chain.

One of the major problems faced by both users as well as manufacturers of TMS software is the lack of uniform standards for formats and ways of exchanging messages (except between shipping companies and container terminals). Organizers of transport communicate with companies of various profiles in the process of transport planning, taking into account the conditions and prices of transport. That means that the organizers of transport must follow the procedures of such companies, or at best, use the software provided by these companies, if available (e.g., when booking and exchanging other data related to the transport of goods).

One of the solutions used for communication between transport organizers and shipping companies is Mediation Service Software (MSS), or an Electronic Transaction Platform (ETP). Users of electronic transaction platforms are able to communicate with a large number of global shipping companies in the standardized way. It is possible to use a software package (a web portal or an application) or to integrate own applications with the electronic transaction platform. The mediation services include: sending the obligatory data regarding the weight of goods, transport booking, sending shipping instructions, tracking the movement of containers, the exchange of bill of lading data, etc.

Keywords:
Transportation Management Systems, transport planning, transport organization, Electronic Transaction Platforms
Social Media Hiring Model in the Area of Sea Transport

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Abstract

**Aims**: Creation of model for social media hiring that is supposed to save time and money while searching for new employees in area of Sea transport (seafarers).

**Methods**: Analysis based on analysing existing frames for employees hiring with help of social medias. Finding a gap and filling it with own model is the key for this method.

**Results**: The social media hiring model includes the design of an automated solution for downloading user data, and a proposal for subsequent analytical data processing and the creation of a predictive model for assessing users behavior on social media. Verification of this model on the questionnaire confirmed effectiveness for recruitment.

**Conclusion**: Existing frames lack an automatic evaluation of behavior of users on the social media. Model for social media hiring contains a guide/manual for automatic data mining of users, particularly from Facebook. It also contains a suggestion how to analyse mined data.

**Keywords**

Hiring model, Social media, Sea transport, Data mining
New logistic business models in fourth Industrial revolution

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Abstract

The Fourth Industrial Revolution, currently in expansion, will completely modify how production, consumption, communications and ultimately how we live. It will ultimately redefine relationships between all stakeholders in quadruple helix especially between citizens and industry and citizens and government. New technologies, connecting people by mobile devices, having extraordinary processing power, capabilities and allowing access to enormous knowledge, combined by biotechnology, artificial intelligence, data mining, factories of future, nanotechnology are currently radically disrupting known business models. In the paper authors discuss all three layers if technology heap layers: technology and data architecture, applications and business architecture and system and society and their implications to change of business models that will create Logistic 4.0. The growing scope of harmonization and the increasing coordination of logistical processes are, finally, the result of a growing complexity of the environment of enterprises, that is currently shaped by fourth industrial revolution heap. In the paper new logistics concepts as Physical Internet and new disruptive technologies as Blockchain, Industry 4.0, vehicle automation, truck platooning and the circular economy will be discussed.

Keywords

Logistic 4.0, artificial intelligence, data mining
Physical internet and Crowdshipping - new logistic paradigms

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Abstract

Physical internet and Crowdshipping are new logistic paradigms that have potential to be disruptive, even “game changer” trends, evidencing big impacts on logistics and transport, and even passenger and freight transport integration. Both paradigms pursue optimization of logistic processes in order to create more effective, efficient and sustainable supply chains. Physical internet is established on integration of physical, digital and operational foundations by means of encapsulation and packaging. The vision of Physical internet is to emulate principles of digital internet, where information is transferred encapsulated in packets as transportation containers. Physical Internet deals only with modular containers, generalizing idea used for maritime containers that have created revolution in world trade and have been fundamental force for globalization. Physical Internet paradigm can be extended using Crowdsipping, as on-demand delivery solution using crowd-sourcing principles. Standardized packets will allow crowdshipping to be embedded in Physical Internet paradigm as a first/last mile solution.

Keywords

Physical Internet, crowdshipping, standardized packets, first/last mile
Blockchain as a tool for fully integrating logistics, maritime transport and e-business

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Abstract

One of the main problems in logistics, as a result of growing shipments, is emerging growth of documentation mass. Competitive position of logistic companies, and especially ports and shipping companies, are greatly influenced by the document flow. Although currently, most of the documentation is created and transmitted in digital form, there are documents, bill of lading for example, that are still remaining in paper form, mainly because of security concerns. Blockchain as a technology could be a solution of this problem driving full integration of logistics, maritime transport, and e-business. Blockchain as a distributed ledger, having records that cannot be altered retrospectively could provide security in sharing information and documents between parties. Blockchain technology will create huge cost savings in the supply chain. As it is opened, transparent, safe and un-hackable, it allows cheap and effective interaction and communication of multitude of intermediaries currently included in supply chain including customs and financial institution.

Keywords

Blockchain, integration, maritime transport
A Simple Mathematical Model for Refrigerating Compressor Optimization

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Abstract

A marine equipment optimization is not an easy task. Obviously, the optimization process depends on the determined criteria. However, at least in case of marine equipment two additional drawbacks emerge: first, the optimal equipment production and its usage instead of standard one, could increase the investment costs resulting with the increase of amortization period and, second, important characteristic of marine equipment should be in accordance with the technical rules of the classification society and the international conventions. Nevertheless, in some cases the optimization of marine equipment is possible and desirable. The paper deals with the refrigerating systems in general and especially with the refrigerating compressors, the most expensive part of the systems. The optimization criterion is the minimization of total cost of the refrigerating system.

The model could result with decrease of refrigerating system cost and an information tool for quicker selection of refrigerating system elements.

Keywords

Optimization; refrigerating compressor; thermal insulation; cost
Perspectives of port integration into the global supply chain

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Abstract

Globalization, offshoring and the notable growth of containerization have changed the maritime transport and logistics chains. Ports became integral part of complex supply chains and serve as a logistics centres, add value, link flows and influence the supply chain patterns and processes. The port competitiveness is determined by its in-house strengths such as efficient freight handling and hinterland connections and by its position and links in the global supply chains. The aim of this paper is to investigate the importance of port integration in the supply chains and its impact on port competitiveness. This paper provides both theoretical and empirical analysis and outline the significance of this investigation for port operators, shipping lines, forwarders and other stakeholders.

Keywords

port integration; port competitiveness; global supply chain.

References


The importance of harmonizing working hours in seaport clusters

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Abstract

Seaport clusters are complex commercial systems, consisting of a large number of heterogeneous stakeholders. Therefore, it is important to harmonize their business procedures to ensure effectiveness. Harmonization implies the adjustment of differences and inconsistencies among different measurements, methods, procedures, schedules, specifications, or systems to make them uniform or mutually compatible. This paper will particularly research the inconsistencies of schedules, or working hours of various seaport cluster stakeholders, which hampers their business flow and seaport effectiveness in general.

In order to analyse the inconsistencies of working hours of seaport cluster stakeholders, it was necessary to collect and summarize the working hours of various government institutions (state services) and service providers (private concessionaires) in the port of Rijeka. Data was collected from 14 different stakeholders, and it was evident that working hours’ discrepancies exist, manifested by different and uneven periods of daily shifts, daily breaks and periods of regular and overtime work.

Service providers have different shifts, and differently defined overtime (and overtime compensation). The authors recommend harmonizing the shifts, periods of regular and overtime work, and overtime compensation of all stakeholders, with the aim of increasing the competitiveness of the seaport cluster and the traffic corridor as a whole.

Keywords

Seaport clusters, working hours’ inconsistencies, harmonization
Cyber-Physical Systems in Self-Orchestrated Supply Chain– Sea Port as Intermediator in Point to Point Delivery

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Abstract:

The supply chain of tomorrow will be more complex, leaner, faster in a time-constrained environment, and most importantly, self-orchestrated. This unprecedented pace of change will be driven by a Cyber-Physical Systems (CPS) as radical technologies that will be cautiously adopted by industry participants (Industry 4.0, Retail 4.0, Society 5.0) over the next 15 years. CPS are the main enablers of transition from „End to End Shipping“ to „Point to Point“ delivery, leading to Self-Orchestrated Supply Chain (SOSC). SOSC contextually integrates related facets of micro, mezo and macro Digital Logistic Twins into a Dynamic Logistic System of Systems. Sea Port, as Intermediator in Point to Point Delivery, requires transition of traditional seaport infrastructures/resources based on CPS as enablers of highly collaborative logistic integrators.

Keywords

Self-Orchestrated Supply Chain, Cyber-Physical Systems, Point to Point Delivery

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Abstract

Where do Mediterranean ports stand in respect of the deployment of alternative fuels for marine transportation. The sulphur cap countdown has started; 1st January 2020 signifies the beginning of max 0.5% sulphur era. The path towards greener sustainable marine transportation includes many options for ports, such as LNG and electricity.

European Commission has already set the deadline for 2025 when the minimum infrastructure should be in place in European ports, issuing warnings to Member-States for delaying to implement national framework promoting alternative fuels. Ports should strive to balance environmental challenges with economic demands, embracing innovative technologies.

What is evident is that collaborative action and effective partnerships are essential for the practicable shift from policy to practice. Three major European co-funded projects, the Poseidon Med II and the Elemed for marine transportation and the CYnergy for energy sector, initiate port infrastructure development for the adoption of LNG and shore produced electricity as fuel in Italy, Slovenia, Greece and Cyprus. Through the following pillars of action: completion of necessary technical, environmental and safety studies; investments stimulation through deployment of EU funding instruments; formation of effective regulatory framework; establishment of the natural gas supply chain and market with clean and affordable energy to end-users (marine, industrial or commercial).

These three projects, by developing port infrastructure for LNG bunkering operations, by preparing the establishment of the Floating Storage Regasification Unit in Cyprus as well as by installing the first on-shore power connection system in the region, offer an integrated approach on how Eastern Mediterranean could serve as an excellent example of synergy building between stakeholders, sectors and countries, aiming at green, viable marine transport and energy efficiency in the region.

Keywords

LNG bunkering, FSRU, Eastern Mediterranean, electrification, cold-ironing
Comparison between simulator modelled and empirical ship squat prediction

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Abstract

One of the most important component in prediction of ship dynamic draught is squat. Ship squat is steady hull downward displacement due to relative water movement around ship hull. That phenomena causes different pressure distribution around the hull and causes water depressions in which ship sinks. Prediction of the ship squat can be made using proposed empirical formulas or navigational simulators. Empirical formulas are based on physical model testing and field measurements for certain fairway and ship configurations, while navigational simulators use complex mathematical and hydrodynamic modelling for given scenario to calculate and predict ship squat. The accuracy of the simulator models are tested on ship models and have proven accuracy in predicting ship squat. This paper analyses differences between modelled and calculated ship squat for two general types of vessels, in a narrow channel and for a different ships speed.

Keywords

ship squat, narrow channel, empirical formulas, modelling, simulation
Application of Business Intelligence Technology to Design Controlling Tools within Port Operations

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Abstract

In the organizational sense, the port represents a very complex entity within which interweaves the effects of the great number of business subjects. Depending on the nature and purpose of their actions, each of them designates their own goals and performance criteria. In accordance with the applied port management model, the basic categorization of core processes is conditioned by the division into the public and private sectors; the goals of public sector entities are directed towards social benefit, and those private to their own economy. From the perspective of the port as a system, the management process in terms of planning and directing the business takes place at different levels; from the fundamental processes, to the coordination, direction of development and positioning of the port as a whole within the traffic, economic and market system. Control is a management subprocess in the function of providing support for different levels of management. Controlling tools are tailored as per requirements of management level and competence, business goals and selected performance-driven performance targets. They relate to the collection, designing and interpretation of information to put the uncertainty of decision making at the lowest level. Business dynamics require manipulation of a large amount of data in a short time, a common need for quick reactions, continuous adaptation, and continuous decision making. It is therefore necessary to apply information technology in designing of controlling tools. Business Intelligence is a set of methods and software tools that allow you to gather data from different sources and use them to form reports and analysis to support the management process. Technology allows filling of data warehouses from different databases and their aggregation and combining in multidimensional reports. IT support is shaped as a result of the business process but there is also a reverse relationship: By applying BI technology, the information system adds value to the management concept of value; improves quality, and creates new instruments and ways of management, management, control, leads to continuous improvement and sustainable development. Standard management reports for ports may refer to the interpretation of the performance of operational processes within the individual business systems, overall activities or sectors, the port market as a whole, on the market and the functionality of the port in terms of meeting the public needs. Depending on the available data, useful reports and analyzes are widened to the entire traffic direction, in which port is an important functional part.
Keywords

Business intelligence; information system; data warehouse; multi-dimensional management reports; value-oriented management method; business performance indicators; control tools.

References


Digital Port present & future

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Abstract

Digitalization of ports activities worldwide is not on a forefront of digitalization of business. Ports being complex and intermodal knots require great co-ordination between all government and business stakeholders at regional, national and EU level. In addition to ports main players are: railways, truckers and all logistic organizations as part of integral supply chain.

Digitally advanced ports (like Singapore, Rotterdam, etc.) are already at ePort version 2.0 providing extended data integration in vessel-port-truck-rail-(barge) domains, while many world port are still at their starting point of digitalization. EU initiatives and regulations (like RFD Directive) have initiated digital projects in many EU ports but many are still far away from a desired user oriented single-window approach to be provided to the whole of their port community.

Digitalization in general and also in ports bring disruption. Business processes change dramatically and transaction times drop from days/hours to seconds. Parties not prepared for changes feel those disruptions as limit for their business. Less digitally advanced ports are loosing their competitiveness and threatened to be pushed out from competitive arena. Competitive advantage obtained thru digitalization is important for small and large ports to keep present customers and bring up new ones.

EDI (Electronic Data Interchange) is already an industry norm in the container transport. Other types of transport and cargo have not yet established their data interchange standards. Innovation is expected to produce new solutions and less innovative ports are bound to creatively copy more advanced ports.

Digitization of economy is now in full swing and many new and emerging technologies could be also implemented in seaports like: cloud computing, bid data (analytics), mobilization, machine learning (artificial intelligence) including logistic solutions incorporated into Industry 4.0 initiative.
Digitalization bring also some challenges. First are digital security and reliability (up-time). Lack of well digitally educated personnel poses great strain to educational system and requires life-long education.

**Keywords**

Digitalization of ports, e-ports, disruption
Development of shipping industry through innovation and technology

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Abstract

Innovations and development of technology, transport and logistics are probably the most used words in today shipping business. Since shipping industry is being very traditional, this presentation discuss about adopting the new technologies and innovations as relevant factors for helping the companies to survive difficult market. Presentation will try to foresee the new trends in shipping industry with a focus to dry bulk market and project cargoes which will determine the future development and necessity for innovations in shipping industry.

Keywords

Shipping industry; innovations; new technologies; bulk market; project cargo
External Cost as Competitive Factor for Affirmation of Rijeka – Pivka Railway Route in the Baltic – Adriatic Corridor

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Abstract

In accordance with European Union transport policy, external costs have become a new and important factor in cargo flows formation. Shifting the freight from road to railway in order to decrease the external costs is one of the consequences of implementing such a policy.

By incorporating the Port of Rijeka into the Adriatic Baltic Transport Corridor, the railway section of the corridor Rijeka-Pivka has gained first-rate significance.

Considering external costs, shifting a part of cargo from the corridor section Koper-Divaca on the section Rijeka-Pivka, and modernization of the railway of this last one becomes the common interest of Slovenia and Republic of Croatia. The increase of cargo flows intensity on this railway route, based on the principles of green logistics, would inevitably lead to the same effects at the Koper-Pivka railway route.

Such development would not jeopardize the competitiveness of Port of Koper, on the contrary, the cargo flows through Slovenia would increase, in a short-term period. This approach means practical realization of the interests for the countries on the Baltic-Adriatic corridor as EU members and efforts of the European transport policy, which takes into account the external costs as an innovative approach to the creation of the "green corridors".

Keywords

Baltic - Adriatic corridor; Rijeka-Pivka railway route, external costs; port of Rijeka
References


