

**2019 World of Shipping Portugal, An International Research
Conference on Maritime Affairs**

Summary Report

21 - 22 November 2019, Hotel Riviera, Carcavelos, Portugal

Edited by

Ana Cristina F. C. Paixão Casaca



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Summary Report

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21 November 2019

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Acknowledgments

I would like to express my gratitude to all my Colleagues and Friends, Members of the Steering Committee, Members of the Scientific Committee, Authors of Papers, and Conference Speakers that supported me along this journey leading to the implementation of the 2019 World of Shipping Portugal, An International Research Conference on Maritime Affairs, which is part of the "World of Shipping Portugal" a web-based initiative on Maritime Economics.

Finally, to my husband for his unconditional support!

I hope to see you in 2021!

Parede, Portugal

21 November 2019

Ana Casaca



2019 World of Shipping Portugal, An International Research Conference on Maritime Affairs

Summary Report

Contents

Acknowledgments.....	ii
Contents	iii
Welcome Message	1
Conference Chairman and Organizer.....	2
International Steering Committee	3
International Scientific Committee Chairman.....	4
International Scientific Committee.....	5
Local Organising Committee	7
Conference Review Procedure	7
Book of Abstracts.....	8
A machine learning approach for calculating leading maritime risk indicators.....	8
An optimization model for truck arrival management - focus on a terminal appointment system.....	8
Co-authorship networks in maritime economics	9
Coevolution of port business ecosystem based on evolutionary game theory	10
Comparative analysis of port governance and cooperation between actors in European port-cities	11
Competition at Gibraltar Strait: Evolution of foreland efficiency in Algeciras and Tanger-Med.....	12
Construction of a global sentiment measure in shipping.....	13
Container terminal productivity and its drivers. Output differentiation and energy variable	14
Containership sizes and port efficiency: Effects on laytime efficiency of the mega-ships race.....	15
Evaluating LNG bunkering automation technology.....	16
Examining marine water quality management in South African seaports.....	17
Financial performance of shipping firms that increase LNG carriers and the support of eco-innovation.....	18
Innovative perspectives for training of the new generation in the blue economy.....	19
Port-city development: A first approach.....	20
Safety culture for shipping companies. The starting point of safety strategies.....	21
Search and rescue operations in the context of migration by sea: the role of the shipping industry in the central Mediterranean crisis.....	23
Simulation model for a vessel platooning transport system.....	24
Spanish initiative for smart digital ports	26



Strategy implementation in shipping companies in Kenya.....	27
Study of ships' behaviour through AIS data analysis and determination of collision risk indexes among ships in the area of ship monitoring - Macapa - AP – Brazil.....	28
The blockchain revolution: main effects of the innovation process.....	30
The cruise seasonal factor in the East Coast of the Atlantic Ocean and the Baltic Sea.....	31
The effect of corporate social responsibility recognition on organisational commitment in an international freight forwarders.....	32
The impact of alternative environmentally differentiated fairway dues systems in Sweden.....	33
The potential of cold-ironing for the reduction of externalities from in-port shipping emissions: the case of Spain.....	34
The role of simulation in the ports and maritime industry: practical experiences and outlook for the new generation of ports 4.0.....	35
The ship repair and maintenance industry. A supply chain management perspective.....	36
The technical efficiency of European terminals: The fourth generation.....	37
Value creation through corporate sustainability in the port sector: A structured literature analysis.....	38
Conference Programme.....	40
Speakers' Bionotes.....	48
Conference Statistics.....	51
2021 World of Shipping Portugal.....	53



Welcome Message

The evolutionary path under which the shipping industry has been going through is, without doubt, an amazing one. The discovery of steam engine and its application on the vessels of those times, has without doubt removed the existing uncertainty derived from having good winds on not. It allowed the establishment of scheduled routes, which could be announced to shippers wherever they were located. The liner shipping flourished and trade agreements between remote regions of the world were established thus pioneering the globalised environment in which we live today. At the same time, vessel specialisation occurred to meet the different characteristics of the different types of cargoes being traded, and numerous types of vessels ply the ocean carrying them; some liquid other dry, some in bulk other containerised. In fact, containerisation is one of the revolutionary innovations that changed the organisation in which the traditional liner shipping market operated. When Malcolm McLean shipped the first containers on board the converted tanker Ideal X in 1956, he was far from knowing the changes that such a box would bring to the world.

The liner shipping industry, which so far lived in an environment of its own, has been forced to open its doors and extend its operations inland creating an array of integrated transport systems that link the north, the south, the east and the west boundaries of the planet. Moreover, it has been forced to adopt new business strategies of which logistics and supply chain management play critical roles. Driven by the desire to cut transport costs the industry has witnessed an increasing vessel size, already experienced in the tanker and dry bulk markets. Today, three market segments dominate the world, the tanker, the dry bulk, and the container shipping markets. While they have different modes of operations because of the inherent nature of the cargoes they carry, they all face the same future challenges.

The constraints imposed by i) the climate change obliging vessels to comply with the global fuel sulphur limit of 0.5% which will enter into force in 2020; ii) the IMO Ballast Water Management Convention, which has entered into force on September 8, 2017 as a mean to stop non-native species from invading local marine environments and causing serious ecological, economic and public health impact on the receiving environment; iii) the International Convention on the Control of Harmful Anti-fouling Systems in Ships aimed at protecting the marine environment and human health from adverse effects of anti-fouling systems on ships by phasing out the use of harmful organotin compounds; iv) the need to improve effectiveness and efficiency of operations from economical, regulatory and safety point of views, and v) the Petya, a malicious software that has spread through large firms, and which shut down numerous Maersk operations, are driving the industry into the adoption of innovative solutions and to invest on research and development.

Topics such as improved waterborne transport concepts, energy efficiency and emission control in waterborne transport concepts, optimisation of transport infrastructure including terminal, the port of the future, the autonomous and unmanned vessels, complex and value - added specialised vessels, and last but not the least digitalisation have been driving researchers from all over the world to find solutions for them. It is with this challenging background that the 2019 World of Shipping Portugal, an International Research Conference on Maritime Affairs main theme is "**Leading the Shipping Industry into the Future**". Moreover, the Conference wants to establish itself as a meeting point of reference bringing together the industry, leading academic scientists, researchers and research scholars to exchange and share their experiences and research results on all aspects of maritime transport to promote a better future for the industry.

Welcome to Portugal, the birthplace of the World Discoveries!

21 November 2019

Ana Casaca



2019 World of Shipping Portugal.
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Conference Chairman and Organizer

Ana Cristina F. C. Paixão Casaca, PhD

Founder and Owner of the '*World of Shipping Portugal*' Initiative

For Ana Cristina F. C. Paixão Casaca shipping is a passion. May be this is due to fact that she was born and grew in this environment. She recalls the codfish fishing boats in Aveiro, the old Fogo and Gerês tanker vessels in Cabo Ruivo, the cargo and passenger vessels that traded to the Azores and Madeira loading and unloading cows at Cais da Rocha in Alcantara. She has seen Mar da Palha, in the Port of Lisbon, full of cargo vessels at the time when containerisation was still at its infancy, and unaware of the changes that such a box would cause in the movement of goods. For all these reasons, shipping runs in her veins.

Ana Cristina Casaca holds a Ph.D. in International Transport/Logistics and has a deep knowledge of maritime transport / maritime economics. She earned her PhD degree from the University of Wales - Cardiff in 2003 and her Thesis focused on the "Competitiveness of Short Sea Shipping in Multimodal Logistics Supply Chains". Her academic background is supported by her nautical career in the shipping industry. In 1985, she earned her elementary nautical studies degree at Escola Náutica Infante D. Henrique (ENIDH) in Paço D'Arcos, Portugal. She was a deck officer in Portuguese shipping companies and some years later taught at the Instituto de Tecnologias Náuticas, Portugal. In 1995, she earned her Bachelor Degree in Management and Maritime Technologies at ENIDH, and two years later, in 1997, she obtained her M.Sc. Degree in International Logistics at the Institute of Marine Studies, University of Plymouth, United Kingdom. In July 1998, she obtained her professional accreditation from the Institute of Chartered Shipbrokers, London, after having sat for 7 exams on shipping related subjects.

Between 1998 and 2007, she published several articles of a professional nature in some Portuguese magazines, but her interest in research would lead her to publish several research papers in well-known international maritime related journals, namely 'Maritime Policy and Management', 'Marine Policy', 'International Journal of Physical Distribution and Logistics Management' among others. Within this scope, in 2017, she was Guest Editorial of 'International Journal of Shipping and Transport Logistics' with a special issue on 'Short Sea Shipping in a Globalized World'. Also within the scope of research, she organised in cooperation with Cargo Edições and chaired the 2010 Annual Conference of the International Association of Maritime Economists and the 2012 International Research Conference on Short Sea Shipping. Recently, in cooperation with Leo Tadeu Robles, she translated into Portuguese the third edition of the "Maritime Economics" book written by Martin Stopford.

Currently, she is developing and implementing the 'World of Shipping Portugal' initiative (of which she is the Founder and Owner). She is an external expert for the European Commission, a work that has been doing since 2003, Associate Editor of Maritime Business Review and a peer reviewer for well-known international Journals. She is member of the Institute of Chartered Shipbrokers (ICS), of the International Maritime Economists Association (IAME) and of the Women's International Shipping and Trading Association Portugal (WISTA Portugal).



International Steering Committee

The 2019 World of Shipping Portugal, an International Research Conference on Maritime Affairs International Steering Committee (IStC) is made up of well-known representatives (hereinafter Members) that have developed a high reputation in shipping, ports and logistics matters, and which are internationally recognized by the industry they serve. It embraces a balanced selection of about 14 Members chosen according to their area of research and work performed and who are the cornerstone of the shipping and ports research network. IStC Members were individually invited 'ad personam' by the Conference Chairman. The IStC function is to provide guidance and assistance to the Local Organising Committee, and contribute to the publicity and promotion of the 2019 World of Shipping Portugal, an International Research Conference on Maritime Affairs. Maintaining the quality of submitted research papers, and an appropriate balance between the interests of researchers and practitioners, are also particularly important goals.

The following Members are part of the 2019 World of Shipping Portugal, an International Research Conference on Maritime Affairs International Steering Committee:

- Adolf K.Y. Ng, University of Manitoba, Canada
- Chin-Shan Lu, The Hong Kong Polytechnic University, Hong Kong, China
- Cláudio Soares, National Agency of Waterborne Transport, Brazil
- Dong-Wook Song, World Maritime University, Sweden
- Floriano Pires, Federal University of Rio de Janeiro, Brazil
- Grace Wang, Texas A&M University, United States of America
- Harilaos Psaraftis, Technical University of Denmark, Denmark
- Ilias Visvikis, American University of Sharjah, United Arab Emirates
- Kevin Cullinane, University of Gothenburg, Sweden
- Masato Shinohara, The University of Fukuchiyama, Japan
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- Paul Tae-Woo Lee, Zhejiang University, China
- Stephen Cahoon, University of Tasmania, Australia
- Wayne K. Talley, Old Dominion University, United States of America



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International Scientific Committee Chairman

Amélia Loja, PhD

Instituto Superior de Engenharia de Lisboa-Instituto Politécnico de Lisboa & IDMEC – Instituto de Engenharia Mecânica/Instituto Superior Técnico

Amélia Loja has received her PhD in Mechanical Engineering from the Technical University of Lisbon (IST) in 2006, and she is presently Assistant Professor at the Mechanical Engineering Department of the Polytechnic Institute of Lisbon' Engineering School (ISEL/IPL), and Integrated Researcher of the Mechanical Engineering Institute (IDMEC/IST). Her academic background integrates a BSc with honours in Marine Engineering in 1992 by the Portuguese Nautical School and a BSc in Computer Science in 1994. Her MSc degree in Mechanical Engineering was also conferred by the Technical University of Lisbon in 1995.

Until the present date, she has supervised/co-supervised more than 20 MSc and PhD theses and is currently involved in 6 supervisions. These theses cover scientific areas such as Mechanical, Civil and Biomedical Engineering. Her scientific publications can be summarized as: 3 thesis, 4 book chapters, 38 journal papers, 56 international conferences papers, 12 national conferences papers. Editor of 10 abstract books and journal special issues. She has already received 2 research prizes and she is co-author of 3 awarded research papers.

Amélia Loja is also Chairperson of the European Community on Computational Methods in Applied Sciences (ECCOMAS) thematic conference SYMCOMP (International Conference on Numerical and Symbolic Computation: Developments and Applications) and since 2017, she has been invited by the European Commission to evaluate H2020 proposals in different subjects related to her competences.



International Scientific Committee

The 2019 World of Shipping Portugal, an International Research Conference on Maritime Affairs International Scientific Committee (IScC) is made up of Members who are familiar with the blind peer review process, even though new blood is always encouraged and welcomed.

Under the chairmanship of Amélia Loja, the 2019 World of Shipping Portugal, an International Research Conference on Maritime Affairs International Scientific Committee comprehends the following Members:

- 🌐 Agata Krystosik-Gromadzińska, West Pomeranian University of Szczecin, Poland
- 🌐 Alessio Tei, Newcastle University, United Kingdom
- 🌐 Alexandros M. Goulielmos, Business College of Athens, Greece
- 🌐 Alkis John Corres, City Law School/ALBA Graduate Business School, Greece
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- 🌐 Chin-Shan Lu, The Hong Kong Polytechnic University, Hong Kong, China
- 🌐 Claudio Ferrari, University of Genova, Italy
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- 🌐 Ghiorghe Batrinca, Constanta Maritime University, Romania
- 🌐 Grace Wang, Texas A&M University Galveston, United States of America
- 🌐 Gul Denktas Sakar, Dokuz Eylul University, Turkey
- 🌐 Haiying Jia, Norwegian School of Economics, Norway
- 🌐 Heather McLaughlin, Coventry University, United Kingdom
- 🌐 Hyunmi Jang, Pusan National University, Republic of Korea
- 🌐 Irwin Ooi Ui Joo, Universiti Teknologi MARA, Malaysia
- 🌐 Jose L. Tongzon, Inha University in Tashkent, South Korea and Uzbekistan
- 🌐 Kee-hung Lai, The Hong Kong Polytechnic University, Hong Kong, China
- 🌐 Lauri Ojala, University of Turku, Finland
- 🌐 Lawrence Henesey, Blekinge Institute of Technology, Sweden
- 🌐 Lourdes Trujillo, Universidad de Las Palmas de Gran Canaria, Spain



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- Manolis Kavussanos, Athens University of Economics and Business, Greece
- Maria de Lourdes Bravo, Faculdade de Economia - Universidade Agostinho Neto, Angola
- Mário Júlio Batista Simões Teles, Orthodrome, Portugal
- Michele Acciaro, Kühne Logistics University, Germany
- Mihalis Chasomeris, University of KwaZulu-Natal, Republic of South Africa
- Nikitas Nikitakos, University of the Aegean, Greece
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- Ricardo J Sanchez, Pontificia Universidad Católica Argentina & United Nations ECLAC, Argentina
- Rui Carlos Botter, University of São Paulo, Brazil
- Ruth Banomyong, Thammasat University, Thailand
- Soner Esmer, Dokuz Eylul University, Turkey
- Stephen Pettit, Cardiff University, United Kingdom
- Stratos Papadimitriou, University of Piraeus, Greece
- Taih-Cherng Lirn, National Taiwan Ocean University, Taiwan
- Thierry Vanelslander, University of Antwerp, Belgium
- Tsz Leung Yip, The Hong Kong Polytechnic University, Hong Kong, China



Local Organising Committee

The 2019 World of Shipping Portugal, an International Research Conference on Maritime Affairs Local Organising Committee is responsible for handling all administrative, organisational and financial tasks related with the preparation, execution and closure of the conference.

The 2019 WoSPortugal LOC is made up of:

- Ana Cristina Paixão Casaca Chairman and Conference Organiser, Founder and Owner of the 'World of Shipping Portugal' Initiative
- Amélia Loja, International Scientific Committee Chairman, Assistant Professor at Instituto Superior de Engenharia de Lisboa, Instituto Politécnico de Lisboa, Portugal)
- Maria de Lourdes Bravo, Auxilary Professor, Universidade Agostinho Neto, Angola
- Ana Filipa Santos da Mota, Grupo de Investigação em Modelação e Optimização de Sistemas Multifuncionais, Instituto Superior de Engenharia de Lisboa, Instituto Politécnico de Lisboa.

Conference Review Procedure

The World of Shipping Portugal review procedure adopted a two-stage approach.

The first stage involved the revision of Abstracts. All Authors were notified about the decision made and Authors of accepted Abstracts were invited to submit Full Papers. Full Papers needed to demonstrate scholarly quality as evaluated on the strength of the methodology used, on the quality/depth of the theoretical background, and on the quality/depth of the analysis and related discussion.

The second stage related to the revision of the submitted Full Papers. All Authors were notified about the decision made and Authors of accepted Full Papers were asked to incorporate all Reviewers' comments. Allocation of Abstract / Full papers were reviewed according to Reviewers' expertise areas.

To follow a robust procedure, in each of these stages, each Member of the International Scientific Committee was asked to review/rank a number of abstracts/papers whose comments were compiled and sent to the Authors in order to improve the quality of the work being presented. The World of Shipping Portugal review procedure used a "blind review" process where the Authors are not revealed to the Reviewers. Revision of Abstracts and Full Papers were reviewed according to a set of criteria's announced in the conference website.



Book of Abstracts

A machine learning approach for calculating leading maritime risk indicators

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ABSTRACT

The shipping industry has been quite successful in reducing the number of major accidents in the past. In order to continue this development in the future, innovative leading risk indicators can make an important contribution. If designed properly, they enable a forward-looking identification and assessment of existing risks for ship and crew, which in turn allows the implementation of mitigating measures before adverse events occur. Right now, the opportunity for developing such leading risk indicators is positively influenced by the ongoing digital transformation in the maritime industry. With an increasing amount of data from ship operation becoming available, these can be exploited in innovative risk management solutions. Combining the idea of leading risk indicators with data and algorithm-based risk management methods, this paper firstly establishes a development framework for designing maritime risk models based on safety-related data collected on board. Secondly, the development framework is applied in a proof of concept where an innovative machine learning (ML) based approach is used to calculate a leading maritime risk indicator. Overall, findings confirm that a data- and algorithm-based approach can be used to determine a leading risk indicator per ship, even though the achieved model performance is not yet regarded as satisfactory and further research is planned.

KEYWORDS

Maritime safety, Risk prediction, Leading risk indicator, Machine learning

AUTHOR(S) BIONOTE(S)

Lutz Kretschmann works as a senior scientist at Fraunhofer Center for Maritime Logistics and Services CML in Hamburg, Germany, where he is engaged in applied research and consulting projects in maritime logistics and shipping. A focus of his work is the digital transformation of the maritime industry, new data driven business models, and the economic viability of innovations such as autonomous ships. His own research interests lie in the field of machine learning and specifically applying deep learning to current problems in the maritime industry.



An optimization model for truck arrival management - focus on a terminal appointment system

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ABSTRACT

In container terminals, unscheduled arrivals of external trucks lead to long queues at container terminal gates. This in turn has negative impacts such as congestion and serious air pollution. In order to alleviate these impacts, we



propose a model for managing truck arrivals. The proposed model aims to optimize the number of appointments that the terminal must announce for each period with objective of minimizing intervention in truck arrivals. Firstly, truck queue length is estimated based on non-stationary queuing theory. Then, the approximation method is integrated in the optimization model. This latter is solved using a heuristic based on a genetic algorithm. Numerical experiments were carried out to study the effect of waiting time limit on the output solution. Results show that truck waiting time can decrease significantly with small changes in the arrival model.

KEYWORDS

Truck queue, Terminal appointment system, Container terminal, Queue length estimation, Genetic algorithm

AUTHOR(S) BIONOTE(S)

Sara Belaqqiz is a PhD student in Industrial Engineering. She received her Engineering degree in Industrial Engineering and Logistics in 2014 from the National School of Applied Sciences of Marrakech, Morocco. Her current research interests concern modelling, optimisation and simulation of container terminal operations.

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Jaouad Boukachour is a Professor of Computer Sciences at Normandy University (France). He holds a Doctorate in Computer Sciences from University of Rouen, in 1992. He is actively involved as a researcher and a teacher in scheduling, optimization, information systems, and logistics.



Co-authorship networks in maritime economics

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ABSTRACT

Network structure in academia demonstrates the way knowledge is articulated and disseminated. The academic area of economics includes a populous community of researchers and a plethora of journals. Maritime Economics is part of this community; however, it possesses distinct characteristics that stem from the nature of the shipping business. We shed light on the structure of this community, exploring the co-authoring partnership between economics scholars that publish their work in Shipping, Maritime and Transportation journals. Our data set consists of 1863 documents published between 1998 and 2017 in 12 primarily maritime economics journals. The selection of articles was based on a number of identified KEYWORDS. We employ social network analysis to identify the structure of collaboration networks and calculate centrality and clustering metrics that demonstrate the central nodes as well as the foremost co-authorship patterns between authors, affiliations, affiliation countries. We have discovered that research in maritime economics has been expanding and the collaboration between authors and



affiliations is denser in the more recent years. Our findings unravel the social structure of the maritime academic community.

KEYWORDS

Co-authorship; Social network analysis; Shipping finance; Maritime economics.

AUTHOR(S) BIONOTE(S)

Odetti Nestoridou is currently a Ph.D. Candidate on Shipping Finance at the University of Piraeus, Greece. She has been employed by major shipping companies in Greece for more than 20 years in positions related to information systems, accounting and finance. Her research focuses on the network structure of the maritime economics academia, combining her professional expertise in technology with her interest in shipping finance and economics.

Andreas Andrikopoulos is an Associate Professor of Finance at the University of Aegean, Greece. He has published a large number of refereed papers in international journals and he is the author of two books. He specialises in corporate governance, corporate finance.

Andreas Merikas is a Professor in Maritime Financial Management at the University of Piraeus. He has produced over 55 refereed articles in international journals, he has received the Lloyds award in education and serves the shipping industry as a shipping finance expert over 25 years.



Coevolution of port business ecosystem based on evolutionary game theory

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ABSTRACT

As a distributing centre of trade and transportation network, ports play an important role in the development of the national economy, and with the changing of global business environment, the port enterprise operation environment is constantly changing, and growing problems are becoming increasingly complex. Since challenges, uncertainties, risks, and crisis exist side by side, it is very necessary and beneficial to do a systematic analysis of the development of port enterprises from the perspective of biological coevolution. In this paper, the evolutionary game model is used to discuss the dynamic change process and evolutionary stable strategy of the collaborative development of the core enterprise and cooperative enterprise in the port business ecosystem. Then, the influencing factors of enterprise decision-making or action selection are analysed, and the accuracy of the model is verified by the numerical model. Finally, suggestions on the development of port business ecosystem are put forward.

KEYWORDS

Port business ecosystem; Core enterprise; Cooperative enterprise; Evolutionary game

AUTHOR(S) BIONOTE(S)

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Thierry Vanelander. Ph.D. Research Professor of Transport, Logistics and Ports. University of Antwerp. Current research interests: transport economics, port economics.

Wei Liu. Ph.D. Doctoral Supervisor. Full professor, member of academic committee of Shanghai Maritime University. Current research interests: strategy planning and management of shipping, port and logistics.

Xu Xu. Ph.D. Associate Professor. Shanghai Dianji University. Current research interests: port, logistics economics and business.



Comparative analysis of port governance and cooperation between actors in European port-cities

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ABSTRACT

Maritime industry transformations force ports to redefine their scope of activities and has an impact on the new trajectories of governance marked by a new level of complexity which has caused a reshaping of the actors' system involved in the organization of ports. Models of port governance commonly consider the "public sector" to be a homogeneous object. But, its variety, the functions it performs and how it is linked with each other actor in the port are not so much analysed. So, the paper aims to provide some insights into this question. Moreover, the development of port activity echoes in the regional economy as well, hence governance is essential to maximizing the impact of ports on their region's economic development. The territory may be a resource for the port and its development. Correspondingly, the port is involved in urban/regional development. Likewise, the paper also seeks to identify the characteristics, constraints and dynamics of the relationship between ports and cities and to study their potential impacts on territorial development. It specifically focuses on an intermediate scale of port-cities. The methodology of this paper is primarily qualitative: interviews are conducted among key actors in ports. Collected speeches are the subject of a content analysis and a statistical treatment of textual data. The study mainly focuses on interrogations about the institutional status of the ports, the issues and consequences of the choices or the role of each category of actors (private /public for instance) in port and/or city governance.

KEYWORDS

Port-city, Governance, Europe, Territorial development

AUTHOR(S) BIONOTE(S)

Arnaud Serry is associate professor in geography at the University of Le Havre Normandy, specializing in maritime transport geography. He is also responsible for the project DEVPORT (www.devport.fr), which is based on the constitution of a Geographic Information System (GIS) dedicated to the Seine axis and which is oriented towards economic geography. His current research topics are focused on three main areas: maritime transport in the Baltic Sea, a specific focus on the Seine valley and Normandy region through and broader works on maritime transport including modern technologies in the maritime world (AIS, LNG).

Lilian Loubet is geographer, associate professor in spatial planning and urbanism at the University of Le Havre Normandy, specializing in territorial recompositions, urban governance and local politics. His current research topics are focused on port governance and port cities development. He is responsible (with Arnaud Serry) of the research



program PORTERR (Ports and Territories). This program aims to optimize relations between port development and regional development.



Competition at Gibraltar Strait: Evolution of foreland efficiency in Algeciras and Tanger-Med

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ABSTRACT

The analysis of the foreland using complex networks techniques as it appears in Freire et al. (2013) and Laxe et al. (2014, 2015) will be used as the main bibliographic references in order to achieve the objectives of the proposed abstract. Nevertheless, the works of Ducruet (2013), Ducruet and Notteboom (2012), Ducruet and Zaidi (2010, 2012) must be mentioned, as pioneer works regarding the rigorous economic treatment of the geographical data using the networks approach. The main objective of this research is to analyse the evolution of the port foreland of the two main competitors at both sides of the Gibraltar Strait: Algeciras and Tanger-Med. The Foreland analysis method will be used using a port efficiency approach in which the increasing connectivity and the foreland scope will be taken as proxy variables of the port efficiency. A worldwide sample of automatic information system (AIS) containership movements will be used and we will compute the foreland of the two ports along three different periods: 2004-2007, 2008-2011, 2012-2015. To be able to compare the port of Algeciras and the port of Tanger-Med we analyse the network parameters of the two ports in three different periods of time. Algeciras, once the biggest containership hub of the Gibraltar Strait area of influence, faces the emergent activity of the Tanger-MED port complex, just on the other side of the strait which has grown along the past years as a competitor, not only in terms of MTonnes, but also in terms of geographical influence. The foreland analysis will show how Tanger-MED have deployed its own influence network, receiving in some cases traffic formerly bounded to Algeciras.

KEYWORDS

Foreland; Algeciras; Tanger-Med; Containers

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Construction of a global sentiment measure in shipping

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ABSTRACT

We construct an investor sentiment measure in shipping through a questionnaire presented to major stakeholders in the shipping sector in order to identify words and their weights with positive and negative connotation for the maritime industry. These words were then extracted with the use of a newly developed algorithm from a sample of 9,500 articles published by Trade Winds and were used to construct the measure. Next we quantify the relationship between the sentiment about shipping market fundamentals with the actual rates in the shipping market and with relevant stock markets performance. We establish a strong bidirectional relationship by employing the generalized method of moments (GMM) over 2008-2018 incorporating all peaks and troughs of the dry bulk-shipping cycle over the past ten years. We investigate and show how perceived market conditions associate with industry-specific rents and subsequently with capital markets returns.

KEYWORDS

Sentiment measure; Maritime shipping; Baltic Dry Index; Generalized method of moments estimation

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Container terminal productivity and its drivers. Output differentiation and energy variable

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ABSTRACT

The actual performance of available infrastructure in response to external pressures should be perceived as a key factor when determining the competitiveness of a country. Sustainability is evolving such an external pressure, therefore the efficiency of container terminals in beyond the traditional economic and operations should play a critical role. Most existing studies find advances in port efficiency and productivity but they are not considering variables such as energy consumption or emissions. In the current strive to improve the sustainability of transport, infrastructures and logistics chains it seems adequate to reflect on and analyse the evolution of port productivity and port efficiency measures and investigate the effects of these new dimensions in traditional models. Consequently, measuring efficiency and productivity differentiating output variables and including new variables such as energy consumption, etc., allows estimating the success achieved by terminals, as well as getting a broader understanding of the sources and efficiency and productivity differentials. Thus, the paper addresses the question: 'If energy consumption and the disaggregation of output matter in the context of efficiency analysis of container terminals?' The paper discusses the theoretical concepts for measuring port productivity and efficiency and applies DEA contrasting results with and without energy consumption, as well as differentiating productive activities (i.e. dry and reefer container handling). The paper reveals how the disaggregation of outputs in terms of reefer containers and dry containers leads to substantially different efficiency scores in comparison to a model without said disaggregation. While it certainly could be argued that obtaining different results is not all that surprising if different input variables are chosen, it has to be noted that also the changes that occurred are in line with what could have been expected based on the reviewed theory. The results are particularly interesting for terminals where reefer activity plays an important role. While theory suggests that strong relationship exists between reefer containers and electricity consumption, said relationship could not be found in the obtained efficiency scores. This is not contradicting this relationship per se, but rather an indication that other input variables that are also highly linked to the reefer container activity and might have similar or greater relevance than energy in the model, one example of these other input variable is labour. The paper is a first step to show the relevance of disaggregation of output and the inclusion of the energy dimension in port efficiency studies.

KEYWORDS

Terminal efficiency; Terminal productivity; Differentiation of output; Energy consumption; Data envelopment analysis



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Containership sizes and port efficiency: Effects on laytime efficiency of the mega-ships race

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ABSTRACT

The methodologies based on Stochastic Frontier Analysis or in Data Envelopment Analysis are predominant in the global landscape of research on port efficiency themes. They constitute a classic methodological approach on Operations Research, solid from the point of view of the theoretical rigorousness, and fertile in new developments and refinements, which unquestionably expand their explaining capacity. This paper explores the possibility of



developing a different approach for the port efficiency problem, focusing in the containership terminals. The methodology is based in the calculation of the relation existing between port handling capacity and ship size: can current containership terminals face the challenge that increasing containership sizes have in their efficiency at the time of loading/unloading operations? The attempts of answering this question should also give clues for loaders, forwarders and, in general, stakeholders of the hinterland, to answer, at the same time, the crucial question of: could I increase my production given the current economies of scale parameters of my shipping hub? The wide spreading of column-oriented databases, opens here the possibility to perform complex multivariate analysis on big datasets, choosing different levels of aggregation. With these tools, an AIS sample of containership positions, with time of arrival and time of departure stored in hours, is operated extracting the elasticity parameter, which links port handling capacity with the ship size. This means, basically, to measuring the capacity of cranes and storage yards to manage increasing amounts of cargo, both from the point of view of increase in ship sizes and considering a net increase in the boxes loaded. In this paper, a characterization of world port regions and a level of disaggregation by port are presented in order to provide clues and evidences on the capacity of port terminals to manage the mega-ships race.

KEYWORDS

Port efficiency, AIS, multivariate analysis, economies of scale

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Evaluating LNG bunkering automation technology

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ABSTRACT

Automation technology has gained much traction over the last few years and its applicability to the maritime industry offers diverse opportunities, such as improved bunkering of Liquefied Natural Gas. To showcase this, an analysis is conducted in this research, starting with an outline of the current state of the art, which is then extended to consider future developments and implementations of automated solutions for LNG bunkering. It is argued that automation technologies and their progression in being accepted by industry will help to attain sustainable growth. Thereby, in order to save time and improve staff productivity in terminals there are factors that must be considered. Crucial factors that have been identified and thus, need be taken into account are among other things: fuel transfer flow, which includes the gasification and re-gasification characteristics; ship status; LNG tanks and their capacities; as well as methods of conventional bunkering that are currently applied in practice. In this context, reliable measurements are required to ensure trustworthiness for such risk factors involved in LNG bunkering.



KEYWORDS

LNG bunkering; Risk factors; Automation technology; Building automation system; Marine industry.

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Lawrence Henesey is an Asst. Professor Computer Science, Blekinge Institute of Technology Karlshamn, Sweden. Since 2000, Dr. Henesey has been researching on the application of Distributed Artificial Intelligence in Container Ports and Terminals, which has culminated into 80+ published articles and two books. In addition to lecturing at several US and European Universities, Dr. Henesey is a member of the board of advisors, SWARM-ENGINEERING. Possessing 27 years of industrial work experience while employed in the development of solutions for energy and data transmission needs in ports and container terminals globally. Dr. Henesey has worked on employing automation and electrification technologies such as AGVs, ASCs, Automated cranes, RTGs and RMGs. Dr. Henesey earned his PhD in Computer Science from Blekinge Institute of Technology, Sweden. Additional degrees are MSc (Cum-Laude) in Transport and Maritime Management from the University of Antwerp, Belgium and degrees from Old Dominion University, Virginia, USA. Lawrence Henesey is a member of the following organisations: Port Equipment Manufacturers Association (PEMA), Swedish Artificial Intelligence Society (SAIS), and Association of Computer Machinery (ACM).

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Examining marine water quality management in South African seaports

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ABSTRACT

South Africa's eight commercial seaports are owned and managed by Transnet National Ports Authority (TNPA). TNPA's vision includes a systematic improvement of the environment in which ports operate and have influence over. Environmental aspects identified within TNPA are ranging from port operation such as cargo handling, dredging, ballast water discharge, hull cleaning, rivers, canals and storm water drains discharging into the bay. The National Ports Act (No. 12 of 2005) stipulate that the Port Authority must regulate and control pollution and the protection of the environment within the port limits. An effective marine water quality management is required for good corporate governance, sustainable development and economic functioning of the South African seaports system. This study has three objectives. First, to examine the current marine water quality management practices in South African seaports. Second, to examine the contributing factors to marine water quality in South African seaports. Lastly, to examine current and proposed marine water pollution prevention strategies in South African seaports. Purposive sampling was used to ensure that only those with practical knowledge of the study area and experience in marine water quality management (ten from Transnet National Ports Authority, two from Council for



Science and Industrial Research, and two from South African Maritime Safety Authority), were selected in this study to share views through semi-structured and face-to-face interviews. As the number of the interviews was only fourteen, data was manually analysed using open coding and constant comparison to generate themes which reflected on marine water quality management in South African seaports. The study revealed that bi-annual ecological monitoring is conducted across all eight ports. Contributing anthropogenic factors ranging from sewage discharge, storm water run-off from residential and industrial areas to catchment areas such as rivers and canals were identified. Ship repair and cargo handling operations were also identified as the main contributors to marine water quality. The study also revealed that partnerships between ports and the local municipalities to manage the anthropogenic factors was viewed as a critical support element to minimise the impact on marine environments. Therefore, the study recommends that the ports conduct impact assessments of ship repair operations on the marine environment. It is also recommended that an integrated maritime industry forum be established to discuss and make holistic decisions that would improve marine water quality management in South Africa's ports.

KEYWORDS

Marine water quality; Ecological monitoring; Ship repair; Anthropogenic activities; National Ports Authority

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Financial performance of shipping firms that increase LNG carriers and the support of eco-innovation

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ABSTRACT

Shipping companies that increase the fleet tonnages of LNG carriers relative to heavy fuel tanker ships is an environmentally positive move that supports and encourages usage of LNG in power generation and other heating applications as an eco-innovation. Increasing LNG carriers also would lead to higher usages of LNG or liquid gas for marine propulsion systems which is an eco-innovation in itself. In this paper, we explore the financial performance of such shipping firms. Empirically the panel data show that firms that increase LNG tonnages experience, ceteris paribus, higher returns on assets, higher operating cost efficiency, and more positive stock returns. The study also



shows that these benefits take time to be realized, so firms could do better to initiate the adjustment of fleet. The findings offer ship owners better understanding of the benefits that can be derived in supporting eco-innovation and policymakers insights on the policies that may stimulate eco-innovation and enhance the social performance of firms.

KEYWORDS

Liquefied natural gas carriers, Shipping financial performance, Eco-innovation

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Innovative perspectives for training of the new generation in the blue economy

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ABSTRACT

The current rate at which technological innovation and adaptations are evolving is exponential, and thus very difficult for humans to follow. This is particularly true when dealing with professions in the Blue Economy, which hosts the majority of the global international trade. This has brought the need to adapt the training programmes of professionals to help counter this reality and thus better prepare the individuals for the industries. This study aims to show that when synergies are created in a network of training centres and companies in the sector within a country or between different countries, the result is rapid learning and the creation of innovative training programmes, which better prepare the professionals for the jobs of the future. To establish this, the Escola collected data from training centres and companies that frequently collaborate in the courses. The premise for the study was made that the current courses offered by the Escola are innovative and experiential in nature, and thus by internationalising and mixing the groups, the training is more successful. The study took into consideration existing innovative courses of the Escola in the Mediterranean region, but the results can be extended to larger geographical areas. It was concluded that it is important to develop tools and course models for training centres and companies to follow, and to ensure that more students have access to them. The industry actors may use the results of this



project to form the basis of future course models to create job opportunities through the networks shared between professionals of the sector and potential employers.

KEYWORDS

Experiential learning; Innovative training; Blue economy.

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Port-city development: A first approach

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ABSTRACT

The objective of this paper is to identify from a holistic perspective, what are the challenges of port 4.0 and evaluate some indicators in a first approach to the Spanish port system, specifically the ports of Galicia. The fourth revolution was based on the current energy models, based on fossil fuels, going, logically, to a process of alternative energies that without a doubt is unstoppable; changes in the parameters of logistics and transport; elimination of intermediation, this is a fundamental element that is based on the third pillar of the new economy 4.0, which is complete digitalization. The optimal port-city solution must be addressed on the need for both the urban planner



and the port manager to assess the possible measures to mitigate as much as possible the pressure that the spaces dedicated to the activity exert on the city and vice versa.

KEYWORDS

Port-city, Galician, Automatization, Sustainability

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Safety culture for shipping companies. The starting point of safety strategies

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ABSTRACT

Maritime safety continues to be an area of concern due to the international nature of the operations and the multi-cultural staff. Although maritime industry is overregulated, the effectiveness of extensive legislation to manage safety on-board ships remains in doubt. Therefore, for ships operators one of the greatest challenges has always been to provide, support and enhance safety in the maritime domain. The authors of this paper introduce innovative ways and tools to ensure safety in the maritime domain, by shifting the definition and practical application of safety from "as few things as possible go wrong" (SAFETY-I) to the "nouvelle vague" for the study of safety "as many things as possible go right" (SAFETY-II). This paper focuses on Safety Culture Mapping, studying the aspects of Human Factors and presenting the implementation steps for shipping companies on how to advance to the next level of safety and create a new safety perception as part of an overall proactive safety practice. The scope of this paper is



to provide hands-on suggestions, in terms of an action plan and to identify the factors that contribute towards a better safety climate on-board ship. To achieve this, different approaches and strategies on safety culture measurement are analysed. Moreover, the adaption of different safety culture scaling is discussed and the most suitable scale is proposed. Finally, the paper explains and clarifies the alignment that exists between safety culture and safety climate on-board ships as perceived by seafarers and shore personnel. The implemented methodology combines attitude questionnaires with structured interviews analysis to explore and capture the current safety culture of shipping companies. In that sense, safety culture assessment is based on various methods that were identified by implementing factor analysis. This is an on-going research that has already revealed interesting findings for the safety culture of seafarers and shore personnel. The decisive actions that are required to achieve a higher level of safety are presented. The research is restricted on shipping companies with specific nationalities combination and vessel types. The innovative methodology proposed in the paper for assessing Safety Culture will assist shipping companies to identify their current safety level, analyse their strengths and weaknesses on the subject matter and then propose actions for improvement to enhance the overall safety level.

KEYWORDS

Safety culture; Assessment; Attitudes; Non-technical skills

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Search and rescue operations in the context of migration by sea: the role of the shipping industry in the central Mediterranean crisis

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ABSTRACT

This article explores the role of commercial shipping in search and rescue (SAR) operations linked to migration by sea. The Central Mediterranean route is used as a case study because for decades commercial ships have been playing a critical role in SAR operations and, in 2014, they accounted for 24% of all SAR activities in the region. Given the limited literature on the subject, a qualitative research approach is used by means of 16 interviews conducted with experts, mainly, from the commercial shipping sector involved in the Central Mediterranean Sea crisis. One of the main contributions of the article is the identification of operational challenges related to SAR activities. These challenges range from unsuitable ship designs for conducting effectively SAR operations to the small number of crew members for dealing with such mass numbers of migrants that require simultaneous assistance. Consequently, the financial costs derived from the involvement of commercial ships in rescue operations have to be borne by the shipping business sector and they differ among shipowners and charterers according to the specific provisions made in the charter agreements. Last but not least, commercial ships have to deal with other challenges on which they have no control of, such as the closure of ports for the disembarkation of migrants that increase the burden on their business activities.

KEYWORDS

Search and Rescue, SAR, Migration, Safety of Life, Mediterranean Sea



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Simulation model for a vessel platooning transport system

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ABSTRACT

"Bringing waterborne much deeper into multi-modal transport concepts, in particular to the benefit of domestic shipping and inland navigation" is the specific challenge for expansion and optimisation of the entire waterborne transport chain. The strategic aim of the 'H2020 NOVIMAR' (NOVel Iwt and MARitime transport concept) project is to adjust the waterborne transportation such that it can make optimal use of the existing short-sea and inland waterways vessels, while benefitting from a new system of waterborne transport operations that will expand the entire waterborne transport chain up and into the urban environment. There are, though, dedicated solutions that could be combined under a common denominator, hereby obtaining the required waterborne system capabilities. The "denominator solution" to the outlined challenges is the waterborne version of "platooning", the Vessel Train



(VT). The VT is an innovative concept that resembles the truck platooning concept. It is composed of a manned lead ship and a number of ships that follow, possibly of varying sizes and at close distance by automatic control. It aims to provide economies of scale and at the same time to enable waterborne transport on smaller waterways, to terminals and in urban areas. This article will develop and validate a new transport model for making economic feasibility calculations of the operation of a VT for short sea, sea river and inland waterway transport (IWT). The main purpose of this paper is to develop a transport model to assess the business economical potential of the VT concept. For this purpose, at the beginning, two performance indicators are used. The first indicator measures the cost advantage for the ship owner when using the VT concept in different modes, instead of traditional individual sailing, while the second measures the total logistics cost advantage for the cargo owner in both mentioned states. The research outcomes will help vessel owners of large and small shipping companies to decide whether it is worthy from an economic perspective to invest in building a new vessel or renovate and update an existing vessel that will be capable of sailing in the VT. Cargo owners correspondingly can use the results to see whether the VT is a worthy alternative for transporting their cargo or not.

KEYWORDS

Vessel train; Economic performance; Transportation model

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Edwin van Hassel (1981) is senior researcher at the Faculty of Transport and Regional economics, Antwerp University where he is also teaching three courses. He has an engineering degree in naval architecture and he has a PhD in applied economics. His main research interest and expertise is in inland navigation, port hinterland transport, ship design and transport modelling. He holds a PhD with a topic in the field of inland waterway transport. More recently the scope of his work has been extended to maritime cost chain modelling. He also is involved in several research ranging from logistics projects to infrastructure cost benefit analysis and transport modelling projects.

Thierry Vanelslander (1975) currently is associate professor at the Department of Transport and Regional Economics. He graduated as a doctor in Applied Economics at the University of Antwerp. Until 2013, he was holder of the BNP Paribas Fortis chair on transport, logistics and ports. Until halfway 2009, he was director of the Research Centre on Freight and Passenger Transport, hosted by the Department of Transport and Regional Economics. He is currently course co-ordinator for the courses 'Management of Innovation and Technology' and 'Port Economics and Business' at C-MAT, and 'Transport Economics' at the Faculty of Applied Economics. His research focuses on business economics in the port and maritime sector, and in land transport and urban logistics. His PhD dealt with co-operation and competition in sea-port container handling. He is also the chair of the World Conference on Transport Research (WCTR) Special Interest Group A2 (Ports and Maritime), and topic area manager for WCTR's track A (Transport Modes). Equally, he is the chair of the Freight & Logistics group within the European Transport Conference.

Eleni Moschouli (1989) graduated as an Economist from the Aristotle University of Thessaloniki (Faculty of Economic and Political Sciences), with the 2nd highest grade out of 102 students at her Ptychio graduation day and in total she graduated 16th out of 416 students, thus being in the top 4% of the students. Regarding her Master degree graduation, she graduated with the highest grade in her specialisation in "Economics and Regional Development" (Grade: 9.33/10, Excellent). She received two scholarships during her undergraduate studies for achieving the highest average grade in two academic years (State Scholarship Foundation-IKY) and she also received two scholarships so as to do her master, from the State Scholarship Foundation-IKY and the George and Victoria Karelias Foundation. She is currently an academic researcher and PhD student at the University of Antwerp (Department of Transport and Regional Economics). Her PhD research deals with the identification of factors affecting performance of transport infrastructure projects, applying methods such as fuzzy set Qualitative Comparative Analysis. Her main scientific interest is economic appraisal and planning of transport infrastructure projects.

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Spanish initiative for smart digital ports

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ABSTRACT

Seaports are one of the most strategic logistical assets for any country. More than 80% of the goods distributed are moved by sea, whereby it is estimated that the volume of international transport will be quadrupled by 2050. Spain is the country with the longest coastline (8,000 km) and its geographical location positions it as a logistical platform for the south of Europe. 60% of its exports and 85% of its imports go through its ports, representing 53% of its foreign trade with the EU. Therefore, the evolution of markets and globalisation also force the industrial digital transformation of these spaces, leading to the Smart Port. Through digital transformation, the ESTIBA+ 2022 project aims to: (i) meet the challenges of the optimisation of port space, port operations times, transport costs and productivity levels; (ii) achieve a highly automated port in which all port devices and assets are connected ; (iii) move forward in the “Smart Port” concept, closely related to that of the cities in which they are located (Smart Cities). The aim of the ESTIBA+ 2022 project is to move forward in the provision of strategic technologies that bring us closer to the port of the future as the only way to meet the growing demands of efficiency, economy, safety and environmental compatibility in line with the "Industry 4.0" concept and with the highest levels of automation, such as those required in the scenarios that integrate different automated ground transport vehicles in port operations. So, ESTIBA+ 2022 is responding to the challenges of optimisation of port space, port operations times, transport costs and productivity levels, maximisation of loading and unloading flows, tax limitations, and natural resources and environmental impact. Besides, ESTIBA+ 2022 will obtain a highly automated port in which all of the port devices and assets will be connected and enabling the different agents to operate interactively: cranes, trucks and dockers, and more specifically it will be carried out focussing on four types of automated logistics vehicles and the associated systems, communications, and sensors required for automating ports. Finally, ESTIBA+ 2022 will go to the “Smart Port” concept, closely related to that of the cities in which they are located (Smart Cities).

KEYWORDS

Smart-Port; Automation; Ground-transport

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Strategy implementation in shipping companies in Kenya

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ABSTRACT

The concept of strategic management in business industry has attracted great attention in the past two decades, and the successful strategy execution is a key for any organization's survival. Many organizations cannot sustain their competitive advantages, despite having a robust strategy formulation process, because they do not get the processes of implementing the strategies. Unfortunately, current research shows that more attention is given to strategy development but less to strategy execution. This study sought to bridge this pertinent gap in literature by establishing the determinants of strategy execution in shipping companies in Kenya. The objective of this study was to establish the determinants of strategy execution in shipping companies in Kenya. The population of the research consists of the 38 shipping companies in Kenya as at 2018. The unit of analysis was the employees in charge of strategic management matters in the shipping companies in Kenya. The study adopted purposive sampling; the officers were purposely selected due to their level involvement in strategy execution matters in their respective shipping companies. As a result, the target population accounted for 190 officers from the shipping companies in Kenya. The study used regression analysis to test the effect among the study variables. Regression results indicated that the strategic management determinants of strategic leadership, organization resources and organization culture were statistically significant in explaining strategy execution in shipping companies in Kenya while organization structure was statistically insignificant. From the study, it is possible to conclude that the shipping companies in Kenya are not fully embracing the strategy execution initiatives within them. Consequently, in order to survive and prosper in a rapidly changing business environment, the companies should strive to maximize on the determinants that influence strategy execution in their companies. Furthermore, the Kenyan maritime regulators should assist the shipping companies in identifying leaders with the right expertise and experience in leading the shipping companies in Kenya to execute their strategies effectively. The regulators should also ensure that the policies and guidelines are put in place that can clearly guide who is to lead these companies. The shipping companies should collaborate with government agencies and other privately owned companies to learn on the best practices of strategy execution.

KEYWORDS

Culture, Leadership, Shipping, Strategy, Strategy Execution

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Study of ships' behaviour through AIS data analysis and determination of collision risk indexes among ships in the area of ship monitoring - Macapa - AP – Brazil

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ABSTRACT

The safety of vessel traffic in congested aquatic areas, such as ports, estuaries and coastal regions, is a key issue for those involved in navigation and society in general. Automatic Identification System (AIS) data proved to be a valuable source for investigating vessel behaviour, and this analysis offers the possibility of recognizing vessel behaviour patterns in a waterway area that can be used to classify the behaviour of the vessel into several categories. The Ship Monitoring Area (AMN) is an obligatory passage of the sea routes that connect the Amazonian ports to the Atlantic Ocean. The present research presents the results of the behaviour analysis of vessels in the Ship Monitoring Area (AMN) from the perspective of the behaviour of ships that sailed between 2016 and 2019, including vessel type, number of records, flag, year of manufacture, port of destination, geographic location, date, time and speed. We also present the two collision risk indexes of ships calculated to assess quantitatively the risk of collision of ships in the AMN: index of speed dispersion, degree of acceleration and deceleration. These two risk indices for AMN are estimated using real-time vessel locations and the navigation speeds provided by Marine Traffic's AIS. The combination of behavioural results, these risk indices, and domain invasion records has led to the conclusion that sections 2, 3 and 4 are the riskiest parts of AMN. The results of these analyses can help related competent authorities and other stakeholders in route optimization and water management projects, and for researchers, provide a systematic way to understand, simulate, and predict behaviours. As a form of continuous protection, we suggest some actions aimed at the preservation, conservation and development of Amazonian biodiversity, to control and mitigate these presented risks inherent in merchant shipping operations.

KEYWORDS

Ship behaviour; Collision risk; Ship management; Amazon River

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The blockchain revolution: main effects of the innovation process

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ABSTRACT

Despite its historical resilience to innovation, several novel technologies (e.g. IoT, AIS data, and automation) have recently been introduced in the maritime sector. While most of them represent incremental changes for the shipping industry, a few of them could represent radical game changers. Among the latter category, blockchain registers a particular role, given the possibility for smoothening administrative problems, providing new ways to achieve secure and frictionless transactions at a global level. In comparison with some of the past experiences of smart contracts or e-documentation, the blockchain concept has several technical and organisation advantages that assure it the potential for pushing forward the digitalisation of many trade operations, affecting the global logistics corridors. While most of the published studies have focused on technical aspects, the adoption and implementation process are far to be clarified since there is not a clear understanding on the potential effects of blockchain on shipping and logistics actors, especially at local level. The proposed study aims at filling this gap, providing insights that might help to better understand: i) which are the actors that impact the most on the blockchain implementation (and related potential frictions), and ii) the difference among alternative initiatives currently present on the market. In order to achieve these twofold aim the study uses a triangulation approach, mixing literature and media reports research with both web based research on main initiative characteristics and expert opinions. An interesting output that emerges from the current research is that public actors (i.e. regulators and customs) are mainly perceived as neutral elements in the blockchain adoption path. On the contrary, private operators are key actors in fostering the blockchain development process.

KEYWORDS

Blockchain; Shipping innovation; Internet of things; Innovation process

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The cruise seasonal factor in the East Coast of the Atlantic Ocean and the Baltic Sea

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ABSTRACT

The continuous growth of the cruise industry since the beginning of the twenty first century brings with it a series of challenges. Among them is the seasonality of cruise traffic. This study examines the monthly cruise passenger movements' distribution of a set of ports located in the northeast sector of the Atlantic Ocean and the Baltic Sea with the aim of determining the existence of seasonality patterns in the cruise traffic. A database of cruise passenger movements during the period from 2007 to 2018 of 24 ports forms the backbone of the empirical analysis. Specifically, a twofold analysis has been performed. First, the seasonality pattern of each port was determined. Second, a cluster analysis was conducted to classify ports into clusters with homogeneous seasonality patterns. The results identify three different seasonality patterns that are closely related with the geographic position of the ports. Moreover, each port cluster identified is associated with specific roles of the ports that compose it in cruise traffic. The research provides an insight of the complementarity of cruise destination regions in terms of seasonality which is particularly useful for practitioners and researchers of the cruise industry

KEYWORDS

Cruise seasonality; Cluster analysis; European cruise destinations; Port management.

AUTHOR(S) BIONOTE(S)

Jerónimo Esteve-Pérez is PhD Naval Architect. He is lecturer of Shipbuilding, Maritime Transport and Sea Trade in the Department of Naval Technology at UPCT. His main research areas are focused on: cruise ports, cruise lines market and maritime transport. In recent years, he has been focused on teaching-learning techniques.



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The effect of corporate social responsibility recognition on organisational commitment in an international freight forwarders

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ABSTRACT

This study aims to examine the relationship between employees' perception on corporate social responsibility (CSR), their job satisfaction, organisational trust and ultimately, organisational commitment in order to suggest academic and practical implications on sustainable management for international freight forwarders in Korea. To conduct this study, 166 international logistics companies in Busan were targeted and a total of 285 questionnaires were surveyed for about 50 days from April 10 to May 30, 2019. Of the 285 data collected, 267 questionnaires were used for correlation analysis using SPSS/WIN Ver.18.0. Specifically, AMOS 18.0 was used to verify the suitability of individual hypothesis in the research model through confirmatory factor analysis and structural equation model analysis. The results of the analysis were as follows: 1) Hypothesis 1, Economic, Legal, and Charitable Responsibility Activities had a significant influence on job satisfaction. 2) Hypothesis 2, economy, and labour responsibility activities had a significant effect on organisational trust. 3) Hypothesis 3 on 'job satisfaction will have a significant effect on organisational trust' was adopted. Interestingly, Hypothesis 4 on 'job satisfaction will have a significant effect on organisational commitment' was rejected. 5) Hypothesis 5 on 'organisational trust will have a significant effect on organisational commitment' was adopted. Through these results, CSR activities should be carried out based on the satisfaction and trust of employees in order to increase the organisational commitment of employees of domestic logistics companies.

KEYWORDS

Corporate social responsibility; International freight forwarder; Job satisfaction; Organisational trust; Organisational commitment; Korea

AUTHOR(S) BIONOTE(S)

Jiyoung Ko is a graduate student at Graduate School of International Studies, Pusan National University, South Korea. She has four years of experience in one of freight forwarding firms in South Korea. Based on her experience, she began to carry out research projects regarding Korean shipping and port industry development with qualitative and quantitative methods.

Hyunmi Jang is an assistant professor in the Graduate School of International Studies, Pusan National University, South Korea. She graduated with an MSc in International Logistics and Port Management with distinction from



Pusan National University in South Korea in 2008. She was awarded a diploma in Social Science Research Methods in 2009 and a PhD from the Department of Logistics and Operations Management of Cardiff Business School in the UK in 2012. Prior to her current post, she served as a senior researcher at Port Research Division, Korea Maritime Institute. She has been published various papers on international transport, supply chain management and marketing in Korean as well as international academic journals.

Sang Youl Kim is a Professor in the Graduate School of International Studies, Pusan National University, South Korea. He graduated with a BSc Honours degree in Management from Korea Maritime University in 1994 and in 2000 was awarded a PhD from the Department of Maritime Studies and International Transport of University of Wales Cardiff. Sang Youl Kim has contributed to many academic papers, conference papers and reports; his broad research interests include port management, supply chain management and intermodal-transport. Particularly, he has been actively involved in international cooperation projects of shipping and port industries initiated by government and international organisations.



The impact of alternative environmentally differentiated fairway dues systems in Sweden

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ABSTRACT

The Swedish system for determining fairway dues at the national level is acknowledged as being unique in attempting to take account of the environmental performance of vessels. It supplements policy instruments at the international, national and local level. Between 1998 and 2014, vessels could get a SO_x discount and between 1998 and 2017 a NO_x discount, both based on certificates. Initiated by the Swedish government, a system that comprises more environmental impacts was developed and implemented in 2018. The new system requires operators that want to apply for a discount, to register their vessels for a score in the Clean Shipping Index (CSI). The CSI covers performance in five categories: NO_x, CO₂, SO_x/PM, Chemicals and Waste. Based on scores and classes, vessels can get 10%, 30% or 90% discount. In this paper, the short-term outcome of the new system is analysed and compared to the old NO_x-based system. The comparison is based on revealed preferences of the involved vessel operators. Vessel specific data about the discounts and scores are analysed as well as the regional distribution of discounts and impacts on different vessel types. The information available to address the environmental impact and abatement costs and the need for further knowledge is discussed. The paper shows that the Swedish Maritime Administration (SMA) has succeeded in creating a system that attracts more vessel types and encompasses more environmental categories, but that the incentives to reduce NO_x emissions have been reduced. Ex-post cost benefit analyses (CBA) of the earlier certificate-based systems have proven them beneficial to society, but it is unclear how the outcome of the new system will be. An ex-ante CBA conducted by the SMA indicates that it will be, but this paper points out several areas that must be addressed before a complete picture of costs and benefits can be presented. We argue that there are efficiency gains in harmonizing the system SMA has introduced with the different systems for environmentally differentiated port fees in Sweden.

KEYWORDS

Cost benefit analysis; Shipping; Environmental impact; NO_x emissions.



AUTHOR(S) BIONOTE(S)

Inge Vierth holds degrees in business administration (Wirtschaftsakademie Schleswig-Holstein, Flensburg) and economics (Christian Albrecht Universität, Kiel). She worked two years as an assistant at Hamburg university (Institut für Europäische Politik and Verkehrswissenschaft). She is German, lives since 1994 in Sweden. She is an experienced transport researcher in transport economics and modelling. Her main field of expertise are freight transport, logistics and transport policy; in the last years with a focus on shipping and environmental issues. She is now a Senior Analyst at VTI (Swedish National Road and Transport Research Institute). Previously, she worked as transport analyst at SIKa (Swedish Institute for Transport and Communication Analysis (1999-2006), as research officer at KFB (Swedish Transport and Communications Research Board (1997-1999).

Magnus Johansson is an economist educated in Sweden (University of Umeå) and an Phd-student at VTI. He works in the field of freight transport modelling and policy research. Previously, he worked as a transport analyst at the Swedish agency Transport Analysis.



The potential of cold-ironing for the reduction of externalities from in-port shipping emissions: the case of Spain

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ABSTRACT

The emissions from vessels have been subject to a number of top-down as well as bottom-up studies during the past years. The amount of interest can be attributed to the perception that shipping is a major contributor to overall world-wide emissions. Still, apart from the global emissions, shipping also comes with a substantial amount of negative local effects. This document provides insights into the external costs of said effects for the Spanish port system, taking into account emissions from different cargo as well as passenger traffic. The methodological approaches of IPA and BeTa are followed. The overall external costs are estimated to be between 326,821,868 euro and 439,674,076 euro. It is found that the population in the respective port city as well as the composition of traffic are important factors when the external costs are determined.

KEYWORDS

Cold-ironing, externalities, ports, shipping

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Beatriz Tovar is Full Professor at the University of Las Palmas de Gran Canaria and a member of TIDES, a leading research team at international level in the field of innovative and sustainable tourist development and Transport. She teaches in undergraduate and graduate (including MBA and PhD) courses regarding the productivity and efficiency measurement for utilities and Transport. She has been actively involved in contracts and research projects with the World Bank, CEPAL, the European Commission or the Spanish Ministry of Transport. She has published in



several respected international journals including International Journal of Production Economics, Transport Policy, Applied Economics, Utility Policy, Journal of Transport Economic and Policy, Transportation, Transport Review, Transportation Research Part A, Part D and Part E, Journal of Air Transport and Management, Maritime Policy and Management, Research in Transportation Business & Management, Maritime Economics & Logistics, European Journal of Transport and Infrastructure Research, Transportation Science, Fisheries Research, Tourism Economics, Energy Economics and Energy policy. Since 2015 she is also a member of the editorial and advisory board member of Transportation Research Part E. Recently she has joined the Editorial Board (EB) of section "Sustainable Transportation" of the journal Sustainability.



The role of simulation in the ports and maritime industry: practical experiences and outlook for the new generation of ports 4.0

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ABSTRACT

Simulation tools has been used in ports, terminals and maritime industry since the mid-twentieth century. Nowadays, they are an indispensable tool in the stages of planning and design of terminals as well as in their daily management. However, the new technological revolution known as the Internet of Things (IoT) in which digital and physical worlds converge has brought a new generation of smart ports or Ports 4.0. This process has generated new challenges and opportunities for port managers, port users, port service providers and other port stakeholders. Simulation and systems interconnectivity should play a relevant role in this new era. A new environment is created with ports and terminals connected at global scale with the entire supply chain. Multiple devices, systems and services covering a wide variety of protocols, domains and applications are connected and all agents need to cooperate. Classical Simulation and Modelling tools and Terminal Operating Systems need to join this wave and evolved accordingly. In the first section of the paper, authors discussed about the different stages of Port Connectivity and Digitalization and how port function has changed in parallel. In the second section, it is described how Simulation and Modelling has evolved in port environments. In the third section, it is described the outlook of simulation this new port ecosystem, including new paradigms, new challenges and relevant aspects as distributed simulation (systems integration), cybersecurity and the use of cloud computing. Finally, authors drawn some conclusions of their work.

KEYWORDS

Smart port; Port 4.0; Port simulation; Port connectivity.

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María Jesús Freire Seoane. Emeritus Professor at the University of A Coruña (Spain), BSc In Economic Sciences University of Deusto (Spain), and PhD in Economy University of Santiago de Compostela (Spain). She has multiple publication on maritime transport economy. She has an extensive number of publications in the area of maritime transport with great relevance at the international level, from studies of regional economic impact (Ferrol port, port of A Coruña), books on economy of maritime transport, and actual trends such as complex transport networks and port efficiency. In addition, she is co-director of the Master in "Port Management and Planning and Intermodality" of Puertos del Estados (Spain).

Beatriz López Bermúdez. BSc in Economic Sciences and BSc in Law University of A Coruña (Spain), PhD in Economy with the title of "Port efficiency and governance models". She focuses maritime transport publications on port governance systems and efficiency studies with update methodologies.

Carlos Pais Montes. BSc in Mathematics University of Santiago de Compostela (Spain) and PhD in Economy University of A Coruña (Spain). He has worked as a data scientist since 2007, developing a wide-ranging research on maritime transport among his most innovative research, it is worth highlighting the research on complex networks of maritime transport related to the foreland area.



The ship repair and maintenance industry. A supply chain management perspective

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ABSTRACT

Ship repair and maintenance (SR&M) are important activities along vessels' life cycle because they contribute to improve vessels' operations and management. While vessels' crews perform small-scale SR&M activities when at sea, large-scale SR&M activities are carried out by ship repair yards. The latter are often related with vessels' reclassification surveys and are very demanding since they imply removing vessels from their commercial operations even for short periods. In presence of large-scale SR&M activities, shipowners have to choose the most adequate ship repair yards to perform them and plan them ahead according to i) ships' commercial operations, ii) the chosen ship repair yard's schedule and iii) reclassification surveys timeframes. This paper aims at studying ship repair yards' suppliers supply chains by analysing the case of Sadoship by means of supply chain mapping techniques to assess its pitfalls and opportunities for improvements. The paper found out that capacity adjustment is the most important aspect, particularly in what concerns labour, because the industry is still labour intensive and therefore not prone to automation and with high levels of volatility. The outcome also suggests that continuous improvement rests on the development of relationships management, namely of a customer relationship from the perspective of the ship repair yard supplier and that there is scope for the development of training programs.

KEYWORDS

Large scale ship repair; Supply chain management; Mapping techniques; Improved efficiency

AUTHOR(S) BIONOTE(S)

Ana Cristina Casaca holds a Ph.D. in International Transport/Logistics. Her academic background is supported by her nautical career in the shipping industry. After being at sea for a couple of years, she earned her Bachelor Degree in Management and Maritime Technologies at ENIDH in 1995, her M.Sc. Degree in International Logistics at the



Institute of Marine Studies, University of Plymouth in 1997, her professional accreditation from the Institute of Chartered Shipbrokers in 1998, and her PhD in International Transport/Logistics in 2003. She published several articles of a professional nature in some industry magazines, but her interest in research would lead her to publish several research papers in well-known international maritime related journals. Since 2003, she has been invited by the European Commission to evaluate transport related proposals and to review transport related projects, and to peer review academic papers submitted to well-known international Journals. She organised in cooperation with Cargo Edições and chaired the 2010 Annual Conference of the International Association of Maritime Economists and the 2012 International Research Conference on Short Sea Shipping. Recently, in cooperation with Leo Tadeu Robles, she translated into Portuguese the third edition of the "Maritime Economics" book written by Martin Stopford. Presently, she is developing and implementing her own project, the World of Shipping Portugal, which is a web-based initiative within the scope of Maritime Economics. She is a member of the Institute of Chartered Shipbrokers (ICS), of the International Maritime Economists Association (IAME) and of the Women's International Shipping and Trading Association Portugal (WISTA Portugal).

Júlio Manuelito holds a MBA in Shipping and Logistics, the "Blue-MBA", at Copenhagen Business School in 2019, and a Bachelor Degree in Marine Engineering at ENIDH in 1994. His academic background is supported by attending the courses "Fundamentals of Maritime trade and Transport" in 2010, and "Certificate in Commercial Risks in Shipping" and "Certificate in Vessel Valuation" in 2017 at Lloyd's Maritime Academy, the PAEM-Programa Avançado de Estudos do Mar, at Universidade Católica Portuguesa in 2014, and "Law of Chartering and Bills of Lading: a Practical Insight" and "Tackling the Challenges in the Next Decade of Shipping" at Copenhagen Business School in 2016. After being at sea for a couple of year, he joined Lisnave Estaleiros Navais SA in 1997 where he held the positions of Project Manager and Manager of the Steel Department. In 2007, he set up his own company, "Sadoship Lda.", and since then his company has been working as a ship repairer aimed at steel and mechanical maintenance. Together with IPS-Instituto Politécnico de Setúbal, he has been developing new methodologies to modernize the ship repair activity, with the use of new technologies.



The technical efficiency of European terminals: The fourth generation

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ABSTRACT

In this research, an analysis is made to test whether the characteristics of Ports 4.0 are determining factors of efficiency. The European Union considers maritime transport as an important axis in its policy, both foreign and domestic, and that is why it is regulated and in the process of establishing a more extensive regulatory framework, through the Integrated Maritime Policy (IMP). Among the objectives of this policy is to maximize the sustainable use of the oceans and seas to enable the growth of maritime regions and coastal regions, thus, different regional strategies have been developed, through the maritime basins, where the fundamental axis so far it is sustainability. This research analyses 35 ports of containerized goods from member countries of the European Union and Turkey, due to its strategic geolocation that connects Asia with Europe.



KEYWORDS

Efficiency; Port 4.0; Stochastic Frontier Analysis

AUTHOR(S) BIONOTE(S)

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Beatriz López Bermúdez. BSc in Economic Sciences and BSc in Law University of A Coruña (Spain), PhD in Economy with the title of "Port efficiency and governance models". She focuses maritime transport publications on port governance systems and efficiency studies with update methodologies.

Carlos Pais Montes. BSc in Mathematics University of Santiago de Compostela (Spain) and PhD in Economy University of A Coruña (Spain). He has worked as a data scientist since 2007, developing a wide-ranging research on maritime transport among his most innovative research, it is worth highlighting the research on complex networks of maritime transport related to the foreland area.

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Value creation through corporate sustainability in the port sector: A structured literature analysis

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ABSTRACT

Corporate Sustainability (CS) in the port sector has emerged as an important driver behind strategy definition of port authorities globally. It has been argued that CS practices have the potential of delivering value for port users and as such grant port operators and port authorities some form of competitive advantage. There is, however, limited evidence behind this claim. The difficulty with collecting such evidence is that we lack measures of port value creation and CS metrics have rarely been developed and applied in ports. This paper provides a framework for collecting empirical evidence aimed at assessing in what way CS can benefit port competitiveness. The framework is built on a systematic literature analysis of the past years. The literature analysis exceeds previous comparable contributions by its analytical detail and provides valuable new insights on sustainability in the maritime domain. The research indicates that the accurate measurement of CS initiatives in the port sector is urgent and meaningful. When appropriately measured, CS can deliver value to port users, however, this is often created indirectly (branding, risk mitigation, etc.). The paper contributes to academic knowledge as it is the first to develop a rigorous CS



measurement framework usable for ports in terms of value. The paper is beneficial to society and business since it offers a framework that can be applied in practice to measure the effectiveness of CS initiatives in terms of value for ports.

KEYWORDS

Corporate Sustainability; Green Ports; Scale Development; Stakeholders, Corporate Social Responsibility

AUTHOR(S) BIONOTE(S)

Michael Stein is an alumnus of the KLU, who graduated in 2014 and joined the Hapag-Lloyd Center for Shipping and Global Logistics (CSGL) as an external researcher for maritime innovations in November 2018. Michael started his career in the shipping sector with a traditional vocational education as "Schiffahrtskaufmann" in the port of Kiel and the Kiel Canal in 2011. Later he finished his dual bachelor study of shipping trade and transportation in Hamburg and in 2014 he finished his MSc at the KLU. From 2015 he worked for a security company as a business development manager for maritime services. Since October 2018 Michael Stein operates as an independent consultant for the maritime sector. The research area of Michael initially focused on ship finance and strategic maritime investments. His current research focuses on port operations and maritime innovations, unmanned technology in shipping, be it Unmanned Aerial Vehicles (UAV) or Remotely Operated Vehicles (ROV) as well as online education in the port sector. Combining photogrammetry with drone-driven aero triangulation, Michael also researches innovative approaches of heavy-infrastructure inspections in ports, virtual reality frameworks in e-learning and human behavior simulation in the maritime domain as well as global port sustainability.

Michele Acciario is Director of the Hapag-Lloyd Center for Shipping and Global Logistics (CSGL) and Associate Professor of Maritime Logistics at Kühne Logistics University (KLU). Between 2013 and 2015 he worked for the same institution as Assistant Professor. In 2011 and 2012 he held the position of Senior Researcher Green Shipping at the Research and Innovation department of Det Norske Veritas AS (now DNV-GL) near Oslo. Between 2004 and 2010 he worked as deputy director and researcher at the Center for Maritime Economics and Logistics (MEL) of Erasmus University Rotterdam, with which he is still associated. Michele holds a BSc and a MSc (cum Laude) in Statistics and Economics from the University of Rome "La Sapienza"; a MSc in Maritime Economics and Logistics from Erasmus University Rotterdam for which he was awarded the NOL/APL Prize for Student Excellence; and a PhD in Logistics also from Erasmus University Rotterdam. Michele was awarded the Young Researcher Best Paper Prize at the IAME Annual Conference in Cyprus in 2005. Michele is member of the Editorial Board of Maritime Economics and Logistics and of the Transportation Research Interdisciplinary Perspectives (TRIP). He is the secretary of the International Association of Maritime Economists (IAME).





2019 World of Shipping Portugal.
An International Research Conference on Maritime Affairs
21 - 22 November 2019, Hotel Riviera, Carcavelos, Portugal

Conference Programme

21 November 2019 (Morning) 0730 - 0900

CONFERENCE REGISTRATION

21 November 2019 (Morning) 0900 - 1030

OPENING CEREMONY

Ana Casaca

Chairman of the 2019 World of Shipping Portugal. An International Research Conference on Maritime Affairs, Portugal

Welcome Speech

Claudio Ferrari

University of Genoa, Italy

The role of the shipping (and of shipowners) in the years to come

António Oliveira

Transinsular-transportes Marítimos Insulares S.A, Portugal

From Cradle to Grave. Where is the Innovation Potential?

Amadeu Albuquerque

Mystic Cruises, Portugal

Cybersecurity in the shipping industry. A shipowners' perspective

Amélia Loja

Chairman of the International Scientific Committee of the 2019 World of Shipping Portugal. International Research Conference on Maritime Affairs

Instituto Superior de Engenharia de Lisboa-Instituto Politécnico de Lisboa and IDMEC – Instituto de Engenharia Mecânica/Instituto Superior Técnico, Portugal

About the Importance of Research



2019 World of Shipping Portugal.
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21 November 2019 (Morning) 1030 - 1100

COFFEE-BREAK

21 November 2019 (Morning) 1100 - 1300

OPENING CEREMONY - PLENARY SESSION

Álvaro Sardinha

APORMAR, Portugal

Challenges and Opportunities for Maritime Education and Training

Michele Acciario

Kühne Logistics University, Germany

Ports of the Future. Fiction or Vision?

Carla Vieira

WISTA-Portugal, Portugal

The Role of Women in Maritime Transport

Lázaro Delgado

SCMA - Sociedade Consultores Marítimos Lda, Portugal

Managing Change in the Shipping Industry. A Shipmanagement's Perspective

Filipe Martins

NAVEX, Portugal

The Shipping World in 2025. A Roadmap for the Shipping Agent

21 November 2019 (1300 - 1430)

LUNCH-BREAK



21 November 2019 (Afternoon) 1430 - 1610

	ROOM 1	ROOM 2
SESSION	INNOVATION IN SHIPPING	PORT MANAGEMENT
Session Chair	Mihalis Chasomeris <i>University of KwaZulu-Natal, South Africa</i>	Inge Vierth <i>Swedish Road and Transport Research Institute, Sweden</i>
1430 - 1455	Innovative perspectives for training of the new generation in the blue economy Lidia Slawinska, Escola Europea - Intermodal Transport, Spain Raquel Nunes, Escola Europea - Intermodal Transport, Spain Eduard Rodés, Escola Europea - Intermodal Transport, Spain	Container terminal productivity and its drivers. Output differentiation and energy variables Thomas Spengler, University of Las Palmas de Gran Canaria, Spain Beatriz Tovar, University of Las Palmas de Gran Canaria, Spain Gordon Wilmsmeier, Universidad de los Andes, Colombia & Hochschule Bremen, Germany
1455 - 1520	Co-authorship networks in maritime economics Odetti Nestoridou, University of Piraeus, Greece Andreas Andrikopoulos, University of Aegean, Greece Andreas Merikas, University of Piraeus, Greece	Comparative analysis of port governance and cooperation between actors in European port-cities Arnaud Serry, University Le Havre Normandie, France Lilian Loubet, University Le Havre Normandie, France
1520 - 1545	The effect of corporate social responsibility recognition on organisational commitment in an international freight forwarders Jiyoung Ko, Pusan National University, Korea Hyunmi Jang, Pusan National University, Korea Sang Youl Kim, Pusan National University, Korea	Coevolution of port business ecosystem based on evolutionary game theory Wenjuan Li, Shanghai Maritime University, China Thierry Vanelslander, University of Antwerp, Belgium Wei Liu, Shanghai Maritime University, China Xu Xu, Shanghai Dian Ji University, China
1545 - 1610	Evaluating LNG bunkering automation technology Lawrence Henesey, Blekinge Institute of Technology, Sweden Robert Philipp, Hochschule Wismar, Germany	Value creation through corporate sustainability in the port sector: A structured literature analysis Michael Stein, Kühne Logistics University, Germany Michael Acciaro, Kühne Logistics University, Germany



21 November 2019 (Afternoon) 1610 - 1640

COFFEE-BREAK

21 November 2019 (Afternoon) 1640 - 1755

	ROOM 1	ROOM 2
SESSION	SAFETY OF MARITIME OPERATIONS	PORT SUSTAINABILITY ASPECTS
Session Chair	Hyunmi Jang <i>Pusan National University, Korea</i>	Vasileios Kosmas <i>Kühne Logistics University, Germany</i>
1640 - 1705	<p>Safety culture for shipping companies. The starting point of safety strategies</p> <p>Georgios V. Lykos, National Technical University of Athens, Greece Nikolaos P. Ventikos, National Technical University of Athens, Greece Katerina Skourtanioti, VENLYS Maritime Specialisation Services, Greece Alexandros Koimtzoglou, VENLYS Maritime Specialisation Services, Greece</p>	<p>The potential of cold-ironing for the reduction of externalities from in-port shipping emissions: the case of Spain</p> <p>Thomas Spengler, University of Las Palmas de Gran Canaria, Spain Beatriz Tovar, University of Las Palmas de Gran Canaria, Spain</p>
1705 - 1730	<p>A machine learning approach for calculating leading maritime risk indicators</p> <p>Lutz Kretschmann Fraunhofer Center for Maritime Logistics and Services CML, Germany</p>	<p>Examining marine water quality management in South African seaports</p> <p>Simphiwe Mazibuko, Port of Durban, South Africa Mihalis Chasomeris, University of KwaZulu-Natal, South Africa</p>
1730 - 1755	<p>Study of ships' behaviour through AIS data analysis and determination of collision risk indexes among ships in the area of ship monitoring - Macapa - AP - Brazil</p> <p>Jose Pereira, University of the State of Amapá, Brazil Claudia Souza, University of the State of Amapá, Brazil</p>	<p>The impact of alternative environmentally differentiated fairway dues systems in Sweden</p> <p>Inge Vierth, Swedish Road and Transport Research Institute, Sweden Magnus Johansson, Swedish Road and Transport Research Institute, Sweden</p>
1755	EXIT	EXIT



22 November 2019 (Morning) 0900 - 1035

	ROOM 1	ROOM 2
SESSION	MARKET ISSUES 1	MARKET ISSUES 2
Session Chair	Alessio Tei Newcastle University, United Kingdom	Beatriz Tovar University of Las Palmas de Gran Canaria, Spain
0900 - 0925	<p>Construction of a global sentiment measure in shipping</p> <p>Theodoros Gavriilidis, National Technical University of Athens & Deree-The American College of Greece, Greece Andreas Merikas, University of Piraeus, and GMS, Greece Anna Merika, Deree-The American College of Greece, Greece Christos Sigalas, Deree-The American College of Greece, Greece</p>	<p>The cruise seasonal factor in the East Coast of the Atlantic Ocean and the Baltic Sea</p> <p>Jerónimo Esteve-Pérez, Universidad Politécnica de Cartagena, Spain Antonio García-Sánchez, Universidad Politécnica de Cartagena, Spain Jose Enrique Gutiérrez-Romero, Universidad Politécnica de Cartagena, Spain</p>
0925 - 0950	<p>Financial performance of shipping firms that increase LNG carriers and the support of eco-innovation</p> <p>Kian-Guan Lim, Singapore Management University, Singapore Michelle Lim, Singapore Management University, Singapore</p>	<p>Containership sizes and port efficiency: Effects on laytime efficiency of the mega-ships race</p> <p>Carlos Pais-Montes, University of A Coruña, Spain David Guerrero, IFSTTAR, France</p>
0950 - 1015	<p>Simulation model for a vessel platooning transport system</p> <p>Loghman NanwayBoukani, University of Antwerp, Belgium Thierry Vanelslander, University of Antwerp, Belgium Edwin van Hassel, University of Antwerp, Belgium Eleni Moschouli, University of Antwerp, Belgium</p>	<p>An optimization model for truck arrival management - focus on a terminal appointment system</p> <p>Sara Belaqziz, ENSEM, Morocco Fatima Bouyahia, ENSA, Morocco Saâd Lissane Elhaq, ENSEM, Morocco Jaouad Boukachour, IUT Le Havre, France</p>
1015 - 1035	<p>The ship repair and maintenance industry. A supply chain management perspective</p> <p>Ana Cristina Paixão Casaca, Independent Researcher, Portugal Júlio Manuelito, Sadoship Repair Lda, Portugal</p>	<p>Strategy implementation in shipping companies in Kenya</p> <p>Eric L. Katana, Kenya Ports Authority, Kenya William K. Ruto, Kenya Ports Authority, Kenya</p>



2019 World of Shipping Portugal.
An International Research Conference on Maritime Affairs
21 - 22 November 2019, Hotel Riviera, Carcavelos, Portugal

22 November 2019 (Morning) 1035 - 1105

COFFEE-BREAK

22 November 2019 (Morning) 1105 - 1300

SESSION	SEARCH AND RESCUE OPERATIONS
Session Chair	Ana Casaca, Portugal
1105 - 1130	Search and rescue operations in the context of migration by sea: the role of the shipping industry in the central Mediterranean crisis Giacomo Ricca, Kühne Logistics University, Germany Vasileios Kosmas, Kühne Logistics University, Germany Michele Acciaro, Kühne Logistics University, Germany
SESSION	DIGITALISATION IN SHIPPING
Session Chair	Ana Casaca, Portugal
1130 - 1210	Digital Ship Certificates in Portugal Cláudia Lauro DGRM - Direcção-Geral de Recursos Naturais, Segurança e Serviços Marítimos (Directorate General for Marine Resources, Safety and Maritime Services)
1210 - 1235	The blockchain revolution: main effects of the innovation process Giorgio Bavassano, University of Genoa, Italy Claudio Ferrari, University of Genoa, Italy Alessio Tei, Newcastle University, United Kingdom
1235 - 1300	Spanish initiative for smart digital ports Jesús Murgoitio Larrauri, Parque Científico y Tecnológico de Bizkaia, Spain Iñaki Fraile De Moya, Bergé, Spain Joshué Manuel Pérez Rastelli, Parque Científico y Tecnológico de Bizkaia, Spain Dionisio Del Pozo Rojo, Parque Científico y Tecnológico de Bizkaia, Spain

22 November 2019 (1300 - 1430)

LUNCH-BREAK



22 November 2019 (Afternoon) 1430 - 1625

SESSION	PORT TERMINALS EFFICIENCY: THE NEW RELEVANT FACTORS 4.0
Session Chair	Maria Jesus Freire Seoane, Universidade A Coruña, Spain
1445 - 1510	<p>The role of simulation in the ports and maritime industry: practical experiences and outlook for the new generation of ports 4.0</p> <p>Ignacio de la Peña Zarzuelo, Universidad Politécnica de Madrid, Spain Maria Jesus Freire Seoane, Universidade A Coruña, Spain Beatriz López Bermúdez, Universidade A Coruña, Spain Carlos Pais Montes, Universidade A Coruña, Spain</p>
1510 - 1535	<p>The technical efficiency of European terminals: The fourth generation</p> <p>Maria Jesus Freire Seoane, Universidade A Coruña, Spain Beatriz López Bermúdez, Universidade A Coruña, Spain Carlos Pais Montes, Universidade A Coruña, Spain Ignacio de la Peña Zarzuelo, Universidad Politécnica de Madrid, Spain</p>
1535 - 1600	<p>Port-city development: A first approach</p> <p>Maria Jesus Freire Seoane, Universidade A Coruña, Spain Beatriz López Bermúdez, Universidade A Coruña, Spain Carlos Pais Montes, Universidade A Coruña, Spain</p>
1600 - 1625	<p>Competition at Gibraltar Strait: Evolution of foreland efficiency in Algeciras and Tanger-Med</p> <p>Andres Jose Aragon Martinez, University of A Coruña, Spain Carlos Pais Montes, Universidade A Coruña, Spain Beatriz López Bermúdez, Universidade A Coruña, Spain Maria Jesus Freire Seoane, Universidade A Coruña, Spain</p>

22 November 2019 (Afternoon) 1625 - 1700

COFFEE-BREAK



2019 World of Shipping Portugal.
An International Research Conference on Maritime Affairs
21 - 22 November 2019, Hotel Riviera, Carcavelos, Portugal

22 November (Afternoon) 1700 - 1730

1700	CLOSING CERIMONY
	SUMMING UP
	Presentation of the conference papers to be published in a Special Issue of the Journal of Shipping and Trade
	Presentation of the 2021 World of Shipping Portugal. An International Research Conference on Maritime Affairs 28-29 January 2021, Hotel Riviera, Carcavelos, Portugal
1730	EXIT



Speakers' Bionotes

Álvaro Máximo Sardinha has a bachelor degree (BSc) in marine engineering, from the Escola Superior Náutica Infante D. Henrique (ENIDH), having professional experience onboard cruise ships, as a merchant navy officer. He successfully completed his postgraduate studies in law and economics of the sea by the Faculty of Law of the Universidade Nova de Lisboa (FD-UNL). He is finishing a master degree (MSc) in law and economics of the sea, at the Faculty of Law of the Universidade Nova de Lisboa (FD-UNL). He successfully completed his postgraduate studies in digital strategic communication at the Universidade de Lisboa. He is also a ship and company security officer, STCW certified according to the International Maritime Organization (IMO). Founder of the TransporteMaritimoGlobal.com platform, the Portuguese Seafarers Agency (Apormar.com), the Job Fair & Careers Working on a Ship (TrabalharNumNavio.pt), and the EconomiaAzul.pt initiative. He is the author of the books "Mar, a terra dos segredos", "Objetivo: Trabalhar num Navio" and of several sectorial studies. Consultant and trainer in blue economy, sea law, maritime law, shipping, strategic communication, and professional careers in the maritime sector.

Amadeu Albuquerque embarked for the first time in 1971 and stayed at sea for 47 years, most of them on board passenger ships. He was Master of cruise ships from 1990 to 2018. On May 2019, he became Nautical Senior Operations Manager of a newly formed cruise company called Mystic Cruises, aimed at expedition cruises with small up-market ships. The most important reason for the change was the wish to leave the actual massification of large cruise ships and return to the attention to detail and importance of the individual service. The experience with large numbers of multi-national crewmembers and passengers created a passion for multicultural differences, applicable to service to passengers, training and coaching of crewmembers and, in general, management of the Human Element diversity. He is a member of the Nautical Institute and the European Shipmasters Association.

Amélia Loja has received her PhD in Mechanical Engineering from the Technical University of Lisbon (IST) in 2006, and she is presently Assistant Professor at the Mechanical Engineering Department of the Polytechnic Institute of Lisbon' Engineering School (ISEL/IPL), and Integrated Researcher of the Mechanical Engineering Institute (IDMEC/IST). Her academic background integrates a BSc with honours in Marine Engineering in 1992 by the Portuguese Nautical School and a BSc in Computer Science in 1994. Her MSc degree in Mechanical Engineering was also conferred by the Technical University of Lisbon in 1995. Until the present date, she has supervised/co-supervised more than 20 MSc and PhD theses and is currently involved in 6 supervisions. These theses cover scientific areas such as Mechanical, Civil and Biomedical Engineering. Her scientific publications can be summarized as: 3 thesis, 4 book chapters, 38 journal papers, 56 international conferences papers, 12 national conferences papers. Editor of 10 abstract books and journal special issues. She has already received 2 research prizes and she is co-author of 3 awarded research papers. Amélia Loja is also Chairperson of the European Community on Computational Methods in Applied Sciences (ECCOMAS) thematic conference SYMCOMP (International Conference on Numerical and Symbolic Computation: Developments and Applications) and since 2017, she has been invited by the European Commission to evaluate H2020 proposals in different subjects related to her competences.

António Oliveira has a degree in Naval Engineering at Instituto Superior Técnico (Lisboa, Portugal). Presently he's Shipowner & Operations Director at Transinsular SA, being daily moved by energy, commitment and speed, with an extremely results oriented mindset he still inspiring teams every day to achieve outstanding performance. Owned by ETE Group since 1936, a reference in the sea economics in Portugal, integrated main activity to maritime areas, engineering, inland waterways, port operations, Transinsular is the biggest Portuguese shipping line, operating



today seven feeder vessels in shortsea shipping and one tanker. In addition to above, being fascinated about shipping, he deeply dedicated the past twenty years of his professional life to the private industry segment, mainly, with proven experience in terms of project management of shipping boats' new buildings (European/ South Africa markets), of project management for ship repairs of all kind of vessels (at Lisnave Shipyards) and on technical management of a NY tanker owner and operator (at General Maritime Management). Since 2014 he's also lecturer at Portuguese Maritime School (Escola Superior Náutica Infante D. Henrique - Lisboa, Portugal) for Maritime Rules, Shipmanagement and Structural & Stability of Ships. As well he's been appointed as member of the DNV GL West European Technical Committee. You can find him at linkedin ([linkedin.com/in/antónio-oliveira-a443434b](https://www.linkedin.com/in/antónio-oliveira-a443434b))

Carla Vieira Carla Vieira, born on the 16th of August of 1994, is a young but very driven person. Passionate about the shipping industry and founding member of WISTA Portugal (Women's International Shipping and Trading Association), which promotes the development of the national maritime cluster and also the empowering of Women in the maritime community. Her training begun in 2012 with a bachelor degree in Port Management and in Transports and Logistics Management at Escola Náutica Infante D. Henrique (ENIDH) in Paço D'Arcos, finishing in 2015. In 2014, always orientated by her interest in the maritime world, she got more training with the European School of Short Sea Shipping, where she learnt about the White MOS Operations (motorways of the seas). In 2015, in order to enrich her knowledge, Carla joined the Faculdade de Direito de Lisboa in order to get Post Graduate Studies in Maritime Law, which she concluded in 2016. As her working experience is concerned, in 2015, after her bachelor's degree, Carla joined the Seafarers department at Euomar, where she was responsible for the handling of documents related to the certification of seafarers. In the meanwhile, came the opportunity for an internship at Briese Schiffahrts, in Germany, where Carla got the opportunity to spend one month working in the Crewing department and also in the ISM department, where she was responsible for crew changes, analysis of Port State Control reports and revision of the corrective plans. After two years, still at Euomar, but in the Registrations Department, she was responsible for ship registration on the Portuguese Flag (MAR). Seeking to grow both professionally and personally, Carla, was the project Manager for MMP – Marítimos Manning Portugal creation, where she works at the present moment, she established the company, branding, website, social media pages software and data base implementation and ISO 9001 QMS implementation. Within her main functions, she is a Crew Agent, selecting seafarers to integrate multinational crews. She also does motivational and informational speeches to the students who will join the maritime industry next, at the Escola Náutica Infante D. Henrique (ENIDH).

Claudia Lauro Claudia Lauro is the IT Head of Division at Direcção-Geral de Recursos Naturais, Segurança e Serviços Marítimos [Directorate General for Natural Resources, Safety and Maritime Services], or DGRM, with the responsibility to implement the online desk BMAR (www.bmar.pt). BMAR is the result of DGRM's business reengineering and innovation which aimed at delivering innovative eServices for citizens, companies and other public services and has available most of the services delivered for seafarers and the fleet flying the Portuguese flag. Recently, Portugal has become one of the first flags to fully introduce eDocuments for merchant ships and seafarers, yachtman, fishery, aquaculture activities, and other uses of the maritime space. Documents are digitally signed and their validity can be checked online. Formerly the Coordinator for the Administrative Health Services of Sintra, was responsible for implementing "Electronic Medical Prescription" project deployment and other network and infrastructure update. With a more than 20 year experience, has a vast experience business advisory, training and consultancy in Public Administration, as well as implementing quality management systems and other projects. Has a degree on Management and Industrial Engineering at Instituto Superior de Ciências do Trabalho e da Empresa, ISCTE.

Claudio Ferrari is full professor of Applied Economics at the University of Genoa, Italy. He is Director of the PhD programme in "Logistics and transportation" and he is member of the scientific board of the Italian Centre of Excellence for Integrated Logistics. His scientific research is focused on transport economics, transport planning and



regional economics, namely with regards to ports and transport infrastructures. He is author of several contributions published in academic journals and books. He is member of the International Association of Maritime Economists (IAME) and the World Conference Transport Research Society (WCTRS). He has joined the editorial advisory board of the International Journal of Transport Economics, Transport Policy, and the Rivista Italiana di Economia e Politica dei Trasporti. During his career he has been involved in many academic research programs and consultancy studies on the transport sector commissioned by organizations such as the European Commission, the OECD, the Genoa Port Authority, and several private companies and government departments in Italy. He is one of the organizers of the IAME 2013 Conference (Marseille, 2-5 July).

Filipe Martins was born in December 1978 in Celorico de Basto but raised in the city of Oporto. Since young, he was always involved in his family business, related with restaurants. At the age of 19 years, completed military service and during a one year period travelled all over Europe. In December 1999, while finishing the secondary high school with night classes, started his shipping career in NAVEX port agency segment, developing a love for shipping related activities and continually striving to improve his skills. During the past 20 years of experience within same company, and under ETE Group umbrella, developed from documentation and assistant clerk to managing the company's operations at Leixões and Viana Castelo ports as well as developing project cargoes and key accounts. In 2018, as awarded with the prestigious the FONASBA Young Ship Agent or Ship Broker Award.

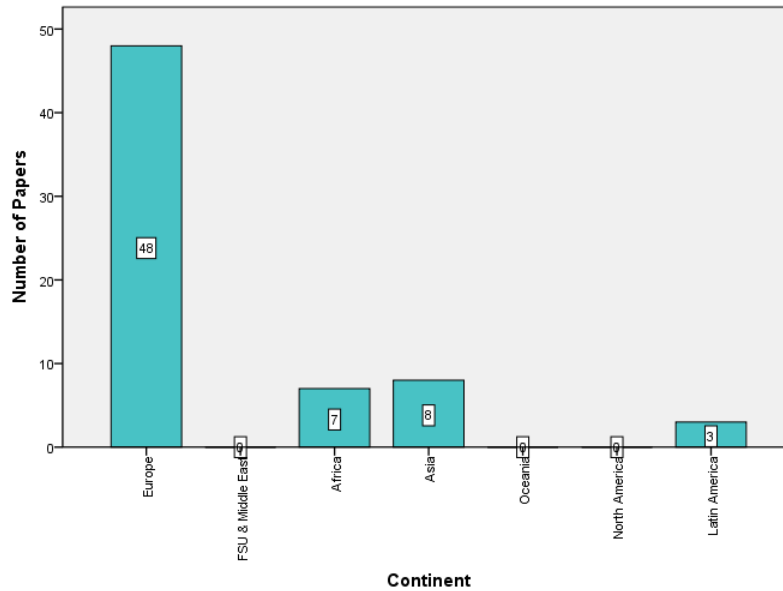
Lázaro Delgado is a member of the Board of Directors of SCMA Ltd, a Portuguese shipmanagement and ship consultancy company, where he is responsible for the development of new businesses and special projects department. Lázaro is also a member of the Board of Directors of NAVEGAR S.A., a Portuguese Shipowning company, involved in the operation of chemical tankers, in the European short sea trade. Besides that and since 1994, Lázaro is also a teacher at the Portuguese Nautical School. Lázaro is a former deck officer, having served at sea up to the rank of Master. He has a BSc degree by the Portuguese Nautical School and has attended a MBA at ISEG. Lázaro has been involved in some important projects, from the construction of bridges, to shipbuilding of bulkers, tankers, container ships, RoRo-pax, fast ferries and research vessels, as well as logistics studies.

Michele Acciario is Director of the Hapag-Lloyd Center for Shipping and Global Logistics (CSGL) and Associate Professor of Maritime Logistics at Kühne Logistics University (KLU). Between 2013 and 2015 he worked for the same institution as Assistant Professor. In 2011 and 2012 he held the position of Senior Researcher Green Shipping at the Research and Innovation department of Det Norske Veritas AS (now DNV-GL) near Oslo. Between 2004 and 2010 he worked as deputy director and researcher at the Center for Maritime Economics and Logistics (MEL) of Erasmus University Rotterdam, with which he is still associated. Michele holds a BSc and a MSc (cum Laude) in Statistics and Economics from the University of Rome "La Sapienza"; a MSc in Maritime Economics and Logistics from Erasmus University Rotterdam for which he was awarded the NOL/APL Prize for Student Excellence; and a PhD in Logistics also from Erasmus University Rotterdam. Michele was awarded the Young Researcher Best Paper Prize at the IAME Annual Conference in Cyprus in 2005. Michele is member of the Editorial Board of Maritime Economics and Logistics and of the Transportation Research Interdisciplinary Perspectives (TRIP). He is the secretary of the International Association of Maritime Economists (IAME).



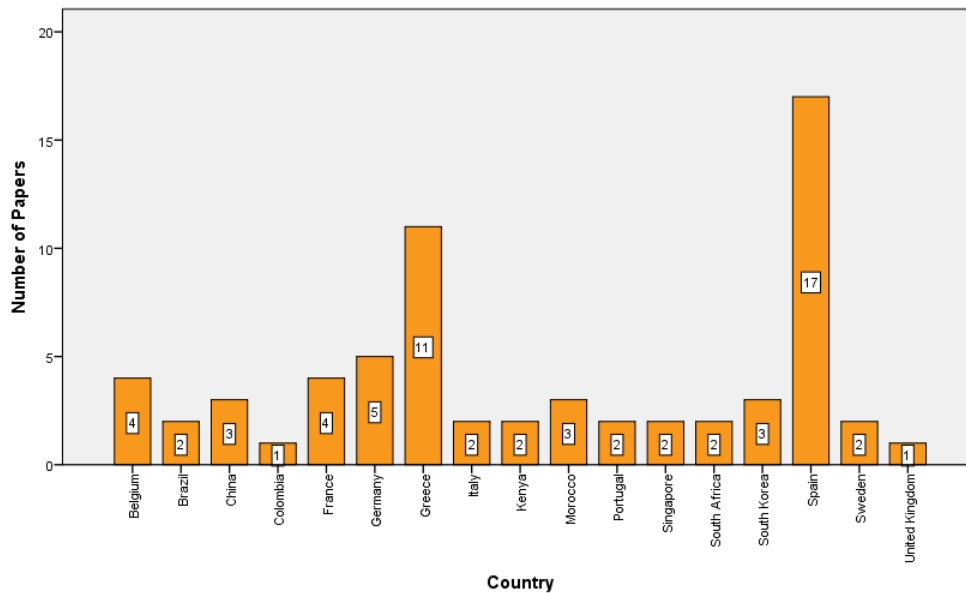
Conference Statistics

Graph 1: Authors by Continent



Source: 2019 World of Shipping Portugal

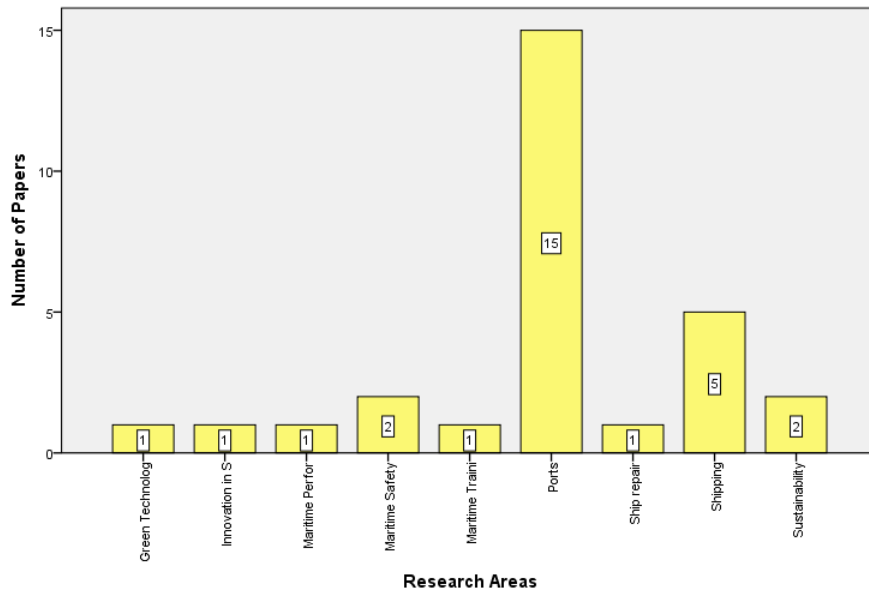
Graph 2: Authors by Country



Source: 2019 World of Shipping Portugal

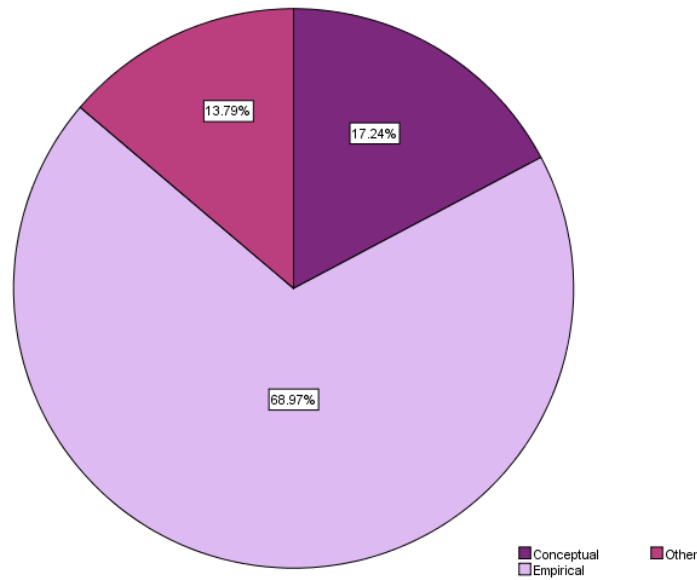


Graph 3: Papers by Research Area



Source: 2019 World of Shipping Portugal

Graph 4: By Type of Paper



Source: 2019 World of Shipping Portugal



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In the Aftermath of 2020! What's next?

Important Milestones

1st Call for Papers & Call for Sessions	8 January 2020
2nd Call for Sessions	29 January 2020
Sessions' Proposal Due	19 February 2020
2nd Call for Papers	19 February 2020
Notification of Sessions' Selection	11 March 2020
Abstracts Due	25 March 2020
Abstracts Review Decision to Authors	29 April 2020
Full Paper submission Due	15 August 2020
Full Paper Decision to Authors	15 October 2020
Revised Paper Submission Deadline	25 November 2020
Paper Format Revision Deadline	2 December 2020
Nomination of Presenting Author	11 December 2020
Authors' Registration Due	18 December 2020
Final Programme Publication	28 December 2020
Submission of PPTs Deadline	22 January 2021
Delegates Registration Due	20 January 2021

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UK classification society Lloyd's Register (LR) has joined with ST [marinelink.com](#)

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