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Intermodal scenarios in the Adriatic-Ionian area: the Stakeholders' views of Corfu, Bari, Pula and Dubrovnik

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Abstract

Intermodal transportation systems have been emerged by the need for advanced, responsive, safe, sustainable, smart and cost-efficient solutions in transportation of goods and passengers. The European Union policies, strategies and initiatives aim to successfully enhance connectivity. The current study examines four (4) intermodality cases in the Adriatic-Ionian area, located in Corfu, Bari, Pula and Dubrovnik. The data were collected with the use of a structured and a semi-structured questionnaire addressing experts, airport and port professionals, researchers, and travel agents. The stakeholders' views were analyzed by descriptive statistics and a SWOT analysis was also conducted. The study aims to provide important insights on the prospects and challenges for the development of intermodal scenarios in the Adriatic-Ionian area according to the stakeholders' views. The main findings of the study are focusing on the realization of tailor-made scenarios such as new soft infrastructures with the incorporation of innovative e-services aiming to improve the quality of the passengers' experience.

Keywords: intermodal transportation, airport, port, Adriatic Ionian area, passengers, stakeholders

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1. Introduction

Intermodal transportation is an integral part of international trade and provides significant benefits to customers and economy (Gharehgozli et al., 2019). It is related with the use of at least two transportation modes linked end-to-end. Moreover, intermodal transportation aims to optimize the travel conditions for passengers by enhancing the advantages of each mode and by minimizing the negative impacts that may cause (Pitsiava-Latinopoulou and Iordanopoulos, 2012). The accelerated globalization process has increased peoples' interaction and transportation is one of the major activities contributing to this procedure. Not to mention that the development of transportation entails the integration of various transport modes along with the provision of cost effective and sufficient services (Resat and Turkay, 2015).

The governmental and scientific interest has been importantly increased in intermodality, during the last decades due to environmental and overall efficiency challenges; it is also appraised that there is a need for integrating the benefits of coordination of modes (Efthimiou and Papatheodorou, 2015). Operational and business models are usually employed to achieve efficient intermodality, aiming to succeed certain economic, environmental and societal objectives (Crainic et al., 2018). More specifically, a large number of stakeholders and decision makers in operation - planning activities are involved in intermodality transportation. All the interested parties have their own goals, make their own decisions, and are associated with other stakeholders via various interconnections, interactions and interdependencies increasing the complexity of the system. Therefore, the need for supportive actions through elaborative management and monitoring procedures is of outmost importance (Kordnejad, 2019). To this end, properly regulated coordination and information flow is of significant for the whole of the operational activities and modes.

Other factors playing critical role in effective intermodality planning are the cost and quality of the products and services addressing the new modes or the improvement of the existing ones; while, distance and time are related with the competitiveness of intermodal transportation as they affect costs and quality (Kreutzberger, 2008). Furthermore, Sakalys and Palsaitis (2006) state that intermodality has proven to be grounded on critical issues including the modernization and development of intermodal infrastructures, and the establishment of advanced logistic centers with the introduction of state-of-the art ICT technologies. Moreover, the better utilization of the existing infrastructure mainly as regards the intermodal terminals, has proven to be important for the optimization of the intermodal transportation (Resat and Turkay, 2015). The new technologies facilitate the information flow, they also contribute to the integration of transport modes and provide high quality services to passengers (Munkácsy and Oszter, 2018). In addition, the employment of highly skilled personnel is important to efficiently operate intermodal systems (Agamez-Arias and Moyano-Fuentes, 2017). Governments should also adopt facilitative transportation policies and practices to intermodal transportation (Vuchic, 2017).

According to Agamez-Arias and Moyano-Fuentes (2017), it is vital to examine case studies as this facilitates their applicability in the development of other intermodal scenarios with similar characteristics. They also suggested to examine cases that have already been implemented in order to improve them. In accordance with the international trends and the demand for efficient planning of intermodal transportation, the European Union (EU) has adopted special policy measures and funding tools in order to enhance capacity for integrated transport, mobility services and multimodality in the Adriatic-Ionian area. As being part of this effort, the current study aims to identify and investigate the existing prospects for the development of four (4) intermodal scenarios in key destinations located in the Adriatic - Ionian area, such as Dubrovnik and Pula in Croatia, Corfu in Greece, and Bari in Italy. The development of the four intermodal scenarios constitutes a first attempt in order to improve regional intermodal transport of tourists in the Adriatic Ionian area, addressing less waiting and processing time for cruise, ferry and airplane intermodal passengers. Moreover, the identification and analysis of intermodality solutions in the Adriatic Ionian area is expected to contribute in replicability and adaptability schemes in other areas with similar characteristics. Relevant studies do not exist in the literature and the current study covers this gap, examining a promising transportation issue, such as the intermodality in a geographic region with a great interest in the EU and special characteristics such as the different level of economic development and the high significance of tourism of the four areas.

2. Methodology

The study area includes key airports and ports and their stakeholders that are situated along the Adriatic Ionian macro region in Croatia, Greece and Italy (Figure 1). Namely, the areas of investigation were the airports and ports of Dubrovnik and Pula for Croatia; the port of Corfu for Greece; and the airport and port of Bari, for Italy. The aforementioned airports and ports are partners in the European project "INTER-PASS" Intermodal Passengers

Connectivity between Ports and Airports, in which the scientific partner is the University of Ioannina, Greece. To this point it should be noted that Corfu Airport participated in the survey as stakeholder.



Fig. 1. Map of the study area (Source: <https://www.adriatic-ionian.eu/>)

In order to collect data addressing intermodal issues in the aforementioned organizations, a structured questionnaire was designed and shared among the project partners namely the port and airport authorities of Pula, Dubrovnik, Corfu and Bari. The structure of the questionnaire included four (4) thematic sessions, namely, the passengers' population, the modal split patterns, the processing procedures and the intermodality features and evaluation schemes adopted by the participating airports and ports.

Another semi-structured questionnaire was also designed including the same thematic sessions addressing the stakeholders of all the aforementioned organizations participating in the project (airports, ports, university of Ioannina) including, regional and public authorities, municipalities, chambers, travel and operation agencies, aviation and maritime sectoral agencies, development and shipping companies, researchers and experts on the fields of mobility, aviation, maritime and transportation experts.

Afterwards, a SWOT analysis took place incorporating all the identified prospects and challenges that exist in the areas of interest. The SWOT analysis was developed by the integration of four SWOT analyses comprised respectively by experts appointed by the ports and airports participating in the survey. For the SWOTs' development a Transnational Technical Advisory Board was established in the frame of INTER-PASS project. The TTAB comprised by field experts from industry and academia, able to facilitate the exchange of knowledge on innovative solutions such as techniques, methods, operating approaches and services that could be easily and successfully adapted in Adriatic-Ionian context. Participants in this study had a deep knowledge of the subject and were highly experienced that both are essential for the potential contribution of this research. The study participants came mainly from the top hierarchical levels which is important for the quality of the study, as these know well the adopted strategies of their organizations (Miles and Huberman, 1994).

The sample population was consisted by seven (7) participants from ports and airports and thirty-nine (39) interviewed stakeholders. The identification of interviewees and subsequent communication with them was accomplished via the email and by telephone, as participants were located in throughout the four areas of interest. The e-mails included a short information about the questionnaire completion as well as more details about the specific aims of the questionnaire. Reminders were sent to four (4) participants, when no response was received after 15 days.

The pre-sampling procedure included an initial pilot testing of the questionnaire. In the pilot phase, the selected participants had a high knowledge of the subject and significant experience and, according to Diamantopoulos et al., (1994), had a higher probability to make considerable improvements. Their comments were taken into consideration and were incorporated into the final questionnaire. In addition, secondary data were used to find important information for the study needs. Discussion of the findings with experts was useful to achieve insight to

particular issues. The combination of these methods contributed to the quality of the study, achieving triangulation to produce “more objective and valid results” (Jonsen and Jehn, 2009, p. 125).

The data collection was carried out by personal interviews in line with the Code of Ethical Practice established in every organization that participated in the survey. the statistical analysis was conducted and descriptive statistics were interpreted.

3. Results

3.1. The passenger’s population

The Adriatic-Ionian Region has more than 70 million inhabitants and plays a key role in strengthening the geographical continuity in Europe. The participating EU member states are Croatia, Greece, Italy and Slovenia; the non-EU ones are Albania, Bosnia and Herzegovina, Montenegro and Serbia. The macro region is rich in natural and cultural heritage assets which positively affect the tourism flow in Europe. Therefore, the improvement of interconnectivity issues is important in this area as it highly contributes to its economic growth (Sarkinovic and Morina, 2018). The four (4) examined areas by the current study comprise of destinations with strategic geographical positions and great potentials. For the efficient interpretation of the results the passengers of the airports and ports were grouped accordingly. Concerning the port case another division took place for the passengers using the ferry boat and passengers using the cruise ship.

In general, it was observed, that the numbers of the passengers have a rising trend in all cases and especially as regards the period 2013- 2017 that was examined in the survey. In particular, the airport passengers’ traffic in the three airports showed significant growth, on an annual basis. Regarding the ports, passengers arriving at Dubrovnik, Pula and Bari are respectively increasing. It should be noted that the Port of Pula serves only cruise ships. However, there is significant decrease regarding the number of passengers arriving at the port of Corfu, for both ferry and cruise. In particular, the passengers used the ferry decreased by 60% between 2013 and 2014, then the traffic is increased, while the cruise ships passengers’ traffic shows small fluctuations (Table 1.). Nevertheless, a large number of relevant data and real-time information are required to efficiently plan and manage intermodal systems. While, the use of cloud applications and particular the Internet of Things, are important for aggregating data and drawing insights for intermodal schemes (Muñuzuri et al.,2019).

Table 1. The passenger’s population in the Airports of Dubrovnik, Pula, Bari and Ports of Dubrovnik, Pula, Bari and Corfu.

	Number of passengers arriving at the Airports			Number of passengers arriving at the Ports to use the Ferries			Number of passengers arriving at the Ports to use the Cruise Ships			
	Dubrovnik	Pula	Bari	Dubrovnik	Corfu	Bari	Dubrovnik	Corfu	Pula	Bari
2013	742,600	182,87	2,799,795	364,670	1,553,403	N/A	N/A	35,353	4,541	N/A
2014	787,329	194,200	2,930,302	372,972	642,405	N/A	N/A	36,159	2,873	N/A
2015	824,992	181,89	3,114,376	402,799	662,097	N/A	31,168	35,131	5,288	N/A
2016	975,128	221,51	3,325,600	405,264	672,552	564,222	33,470	34,974	5,498	52,367
2017	1,138,622	299,63	3,390,499	451,121	730,479	627,338	34,075	34,883	13,758	80,064

3.2. The Modal split patterns

Representatives from ports and airports of the 4 territories were asked to describe the modal split of passengers arriving at their facilities. As for the participating ports, records were provided for the passengers that travelled by ferry only from Bari Port while the ones travelled by cruise ship were recorded by the two (Corfu, Pula) of the four ports. It is noted that the modal split in ports is mainly focused on the use of taxis (30%), while respectively for the participating ports own cars stand in the top of the passengers’ preferences (30%) as regards modal split. Only two (Dubrovnik, Pula) out of three airports provided some indicative records. In particular, half of the arriving passengers of Dubrovnik Airport use a taxi to get to their destination, while an important percentage of 35% of passengers use a bus or a coach. The 13% rents a car and only a small percentage of 4% use their own car to depart from the airport. On the contrary, almost four out of ten of the arriving passengers in Pula Airport use their own or a rented car and approximately the 30% use a taxi or a bus/coach.

3.3. The Processing procedures

The ports and airports of the 4 territories were asked about the processing procedures that are implementing in their organizations and preferred by their passengers. As regards the provider of the passengers' tickets the total of the participating airports did not acquire this kind of data. On the other hand, concerning information deriving from ports, Port of Corfu claims that most of passengers obtain the ferry ticket via agencies, something that confirms the Port of Pula respectively for cruise passengers. At Port of Bari about half of the travelers are said to obtain the ferry ticket via the internet. The next question investigated the "waiting time" at the three airports. Specifically, Dubrovnik Airport claims that the majority of passengers have to wait little (< 30 min) (37%) and too little time (<15 min) (36%). The 13% of the passengers are said not to wait at all, while almost 10% have to wait much (between 30 min to 1 h) (7%) and too much (>1h) (3%) at the airport. At the Airport of Pula almost the total of the passengers has to wait for a little time (<30 min) (100%).

3.4. The Intermodality features and evaluation

The intermodality features of each organization were further examined, covering certain issues such as the existence of a special department that deals with intermodalism at the ports and airports, their intention to design and operate an intermodal concept of transportation, their primary needs in order to adopt an intermodal model as well as their evaluation and future expectations for the creation of an intermodal strategy. The participating airports were asked if they have a special department for intermodalism, whereas none of them seems to have one. The same findings represent the existing situation for ports as well. As regards the Intermodal concept of transportation all the participating airports claim to implement some special measures in order to facilitate the passengers' transportation needs in peak seasons. In particular, both Dubrovnik and Pula Airport claim to engage more taxis and shuttle buses during summer season. Additionally, the Bari Airport refers to a general strategy aiming to facilitate the passengers' modes in reaching the airport; while, this could not be considered as an intermodal concept. Respectively, the ports of Dubrovnik, Corfu and Bari are said to use an intermediate intermodal concept too. For the Port of Dubrovnik, it is highlighted that there are more available taxis on port rush hours, and also coordinated activities supervised by the Municipality such as traffic police, public transportation and tourist agencies; whereas, the specific measures are not related to homeport operations and homeport passengers yet listed in the general measures for port activities. For the Port of Corfu, it was stressed that it is an inherent need to invest on intermodal public transportation-based solutions for changing the current situation such as more expensive car rentals and increased taxi fees. The Port of Pula does not use any intermodal transportation concept. Moreover, the Port of Bari responded that there are available taxis and public buses from/to train station which possibly triggered during the periods with large passenger traffic burden. Concerning the reasons for implementing and developing intermodal concepts at the ports and airports from the 4 territories the most important reasons seem to be environmental issues such as harmful emissions, the intention to increase their capacity and the expansion of their catchment area, which is closely affiliated to capacity (Fig. 2.). Furthermore, the participating Airports of Croatia and Ports of Croatia and Italy agree that they have future plans to expand/strengthen intermodal concepts, while the Airport of Bari and the Port of Corfu do not share the same opinion.

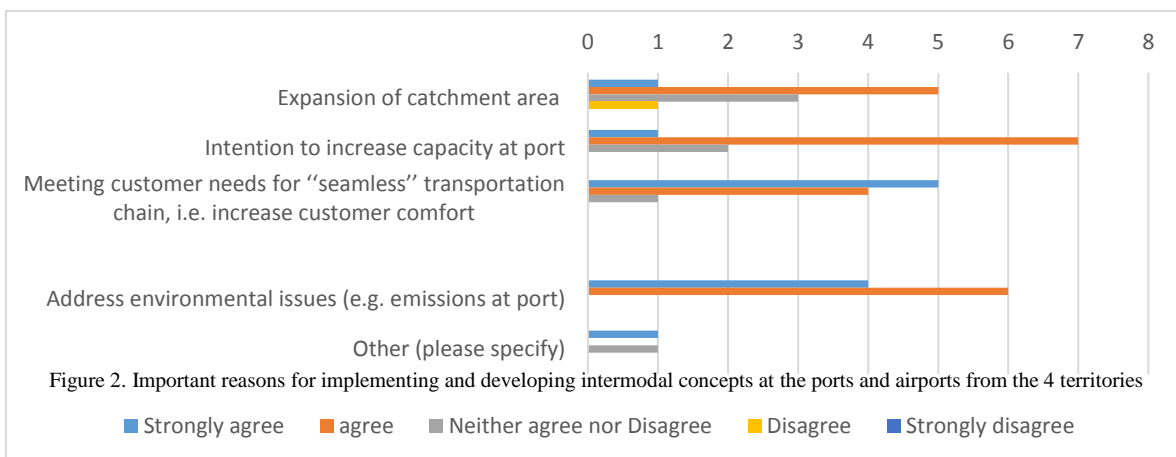


Figure 2. Important reasons for implementing and developing intermodal concepts at the ports and airports from the 4 territories

■ Strongly agree ■ agree ■ Neither agree nor Disagree ■ Disagree ■ Strongly disagree

In addition, representatives from all participating ports and airports were asked to evaluate and describe their future expectations on intermodalism in their territory (Fig. 3). Most of them agree that intermodal concepts represent an important competitive advantage for an airport or a port, the overall importance of intermodal concepts for the airline/maritime industry will increase in the future and that public authorities and government agencies are sensible to intermodal issues and should support them. It is worth noting that three out of ten of the questioned disagree that the customer expectations concerning intermodal concepts are evaluated on a regular basis.

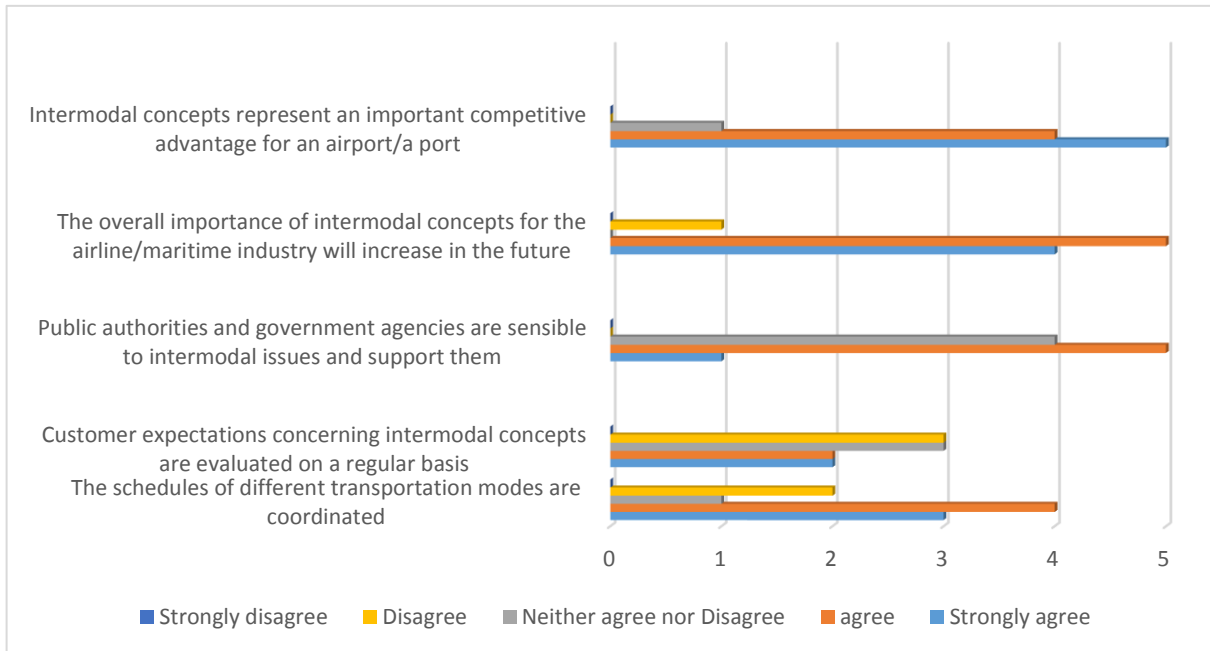


Fig. 3. The evaluation and description of ports and airports future expectations on intermodalism

The stakeholders' views

Dubrovnik stakeholders (n=19) identified the lack of long-term strategy to develop intermodal transportation, focused on the needs of infrastructure and personnel for local organizations and on the lack of effective intermodal planning in the area. The employment of more 15-20% qualified personnel is expected to significantly enhance the airport and port operations. According to the stakeholders' views there is no efficient connection of port and airport except from minor improvements that take place in the summer. To this end the further development of public sea transport is suggested. As regards Pula stakeholders (n=10), they are concerned about the efficient management of the increasing passenger arrivals, strategic plans related to the passengers' needs and the public sector involvement in intermodal concepts of transportation. According to their views, development of the relevant infrastructure and the employment of new qualified personnel is required. Also, the use of new technologies and the construction of new intermodal terminals are vital for the provision of quality services.

Bari stakeholders (n=5) consider that cruise passengers should be managed differently from other users; while, sustainable mobility planning is considered as important along with the development of real time services and innovative technologies. According to their views, intermodal systems should be faced as an integrated system. In addition, the creation of efficient intermodal links between points of interest such as port-airport, port-cultural attractions and airport-cultural attractions are suggested as useful. Regarding the future expectations of the stakeholders, they focus on the enhancement of cruise, the improvement of the connections of the regional airports with the other means of transport such as train, buses and ferries, while the improvement of the public transport services is thought to be also necessary.

Finally, Corfu stakeholders (n=5) mention that more than almost eight out of ten of port arrival passengers visit the city centre even for few hours. Therefore, they acknowledge that there is need for sophisticated intermodal planning in order to facilitate transport in Corfu mainland with the organization of devoted trips throughout the island. The off-airport check-in for cruise ships passengers is regarded as necessary, as will significantly limit the waiting time and queues at the airport. This could be also achieved also by the use of smart information system. It is also stressed that by the total of the interviewed stakeholders the future improvement of the current situation is

related to the creation of synergies among transport operations, cooperation of port and airport, establishment of a specific department with experts on intermodality.

The SWOT analysis

Although, SWOT has been criticized that it is probably presents the subjective views of the participants, it consists a traditional form of brainstorming (Phadermrod et al., 2019). The SWOT analysis is a useful tool grouping the strengths, weaknesses, opportunities and threats of the examined issue in an organized and manageable list. A collective SWOT analysis of the four (4) examined destinations (Dubrovnik, Pula, Corfu, Apulia) is presented in the following table 2, based on experts appointed by the relative ports and airports. This will serve as a useful tool for the creation and development of action plans, which include the creation and establishment of certain activities, strategies and initiatives, having as a main objective to improve intermodality in the specific destination and in Adriatic-Ionian area.

Table 2. A collective SWOT analysis for Dubrovnik and Pula (Croatia), Corfu (Greece) and Bari (Italy).

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> • Strategic geographical location (4 destinations) • Favorable climate conditions (4 destinations) • Rich natural, cultural, tourism and historical characteristics (4 destinations) • Long-standing tourists’ attractiveness (4 destinations) • Dubrovnik: good potentials for development of medical, cruise, nautical, adrenaline and rural tourism – listed in the UNESCO World Heritage sites – developed maritime sector (2 international ports which are one of the leading in the Mediterranean) – developed aviation industry. • Pula: port is situated near the city center, is protected from weather inconvenience, is close to a national park and to the railway station and has very good road connection – airport is near to port, little environmental disruptions, there is land available for extension, and no competition from the other airports. • Corfu: port has a basic infrastructure of tourist reception, is a profitable organization with a specified ownership (the state), applies an integrated information system, follows international safety standards, has low damaged/limited theft cases, is environmentally friendly (Eco Ports and ISO 14001 Port Certifications), technical works are under implementation, significant extensions for cruises and yachts take place and changes 	<ul style="list-style-type: none"> • Dubrovnik: isolated in the Croatian territory (transport problems and limits the development) – shortage of medical staff in hospitals – hazard of Dubrovnik losing its historical identity – unproportionally economic development within the Country (Dubrovnik is highly developed) – old road network (highway from the ‘50s without alternative routes) – poor road and maritime connectivity within Croatia and no railway connection – poor road connectivity between airport and port. • Pula: port is regional, underfinanced, without taxi and bus station, poorly developed in passengers traffic sense, isolated within the Country – Airport absence of home carrier, seasonal international traffic – poor maritime connectivity within the Country – no railway connection – lack of marketing activities –dependence on “external” GDP development. • Corfu: political interference in Port management - coastal waters quality deterioration - poor road design and traffic delays - old equipment - limitations on the development of port surroundings. • Bari: lack of information about public transport connections to/from the port and airport - lack of local public transport during the winter - poor road status for freight transportation – lack of parking for cruise passengers arriving by private means – poor access to cultural destinations.

<p>for the provision of higher quality cruise and ferry services.</p> <ul style="list-style-type: none"> • Bari/Apulia: developed maritime and aviation sector (5 ports and 2 airports), they are near each other and near to the town center, offer important national and international connections – the 2 airports serve 7.5 million passengers – tourism demand all year long – listed in the UNESCO sites and have the potential to attract various forms of tourism to the internal areas – parks and marine protected areas – presence of cultural, artistic, food and wine attractions of the Region. 	
<p>OPPORTUNITIES</p>	<p>THREATS</p>
<ul style="list-style-type: none"> • Possibility of financing from EU funds as all countries of the examined destinations are members of the EU (4 destinations) • Increasing world trend of cruising tourism (4 destinations) • Dubrovnik: prolongation of the tourist season – strategic location within the Country and within the Region – possibility for development of road, rail and ferry transport – development of alternative energy sources. • Pula: opportunity to develop the cruise terminal close to the city – attraction of new airlines – support and cooperation with Venice Port – new part of the Port is constructed – possibility to develop ferry transport – prolongation of tourism season. • Corfu: reduction of traffic in city, coming from the improvement of road network – good connection with public transportation – ability to increase capacity – reduction of pollution and accidents rates. • Bari: development of alternative energy sources - better connectivity is provided between Airports and Ports with public and private means. 	<ul style="list-style-type: none"> • Brexit and overdependence on the specific markets (4 destinations) • Climate change (4 destinations) • Dubrovnik: overdependence of air and maritime traffic – poor rail network – increased competition from neighbor countries in development of transport routes – lack of environmental management and protection systems. • Pula: overdependence on tourism – lack of a good marketing plan for the development of Airport. • Corfu: restricted financial resources for new investments– strong competition among nearby tourist ports within Greece and within Adriatic area– bureaucratic obstacles – unstable economic and political conditions in the Region and in the Country. • Bari: dependence of air and maritime traffic based on the global tourist demand – lack of rail network – lack of the appropriate legislative framework aligned with the development strategies.

4. Conclusions

The Adriatic-Ionian Region presents significant advantages and the implementation of a well-organized intermodal

transportation system may assist its tourism and economic growth. The participating countries present diversity, while, Italy and Greece have advanced infrastructures compared to West Balkan countries that lagging behind in roads, ports, airports (Malagas et al., 2019). The EU has a great interest for the Region developing specific strategies and initiatives (European Union Strategy for the Adriatic and Ionian Region (EUSAIR), which emphasizes to the enhancement of connectivity and tourism. To meet the needs for improved transportation in benefit of the countries and their citizens, EU provides funding opportunities, which the interested countries should capitalize in order to improve their transportation infrastructures.

This could be achieved by adopting new technologies addressed to intermodal transportation, and by the exploitation of the existing infrastructures and by the establishment of innovative ones in ports and airports, in their terminals and the roads surrounding them. New digitization and ICT technologies are important for the development of intermodal transportation. Not to mention that terminals are the most critical components of the entire intermodal transportation chain and more emphasis should be given on their improvement (Bektas and Crainic, 2007).

Moreover, an efficient intermodal transportation system should involve the use of big data in various procedures (Milne and Watling, 2018), data analysis concerning travel research and modal split patterns (Forber et al., 2016), and smart devices focusing on e-ticketing and systems for tracking passenger routes by mobile devices (Munkácsy and Oszter, 2018). Efficient planning should also include the involvement, coordination and cooperation of all the relevant governmental and transportation agencies to successfully address the integration of different transportation modes (Bektas and Crainic, 2007; Efthymiou and Papatheodorou, 2015).

Concerning the four (4) examined destinations, it is obvious that they have important contribution to the tourism market and they also have great potentials for further development. In particular, in Dubrovnik, there are many challenges regarding the location and practical difficulties in transportations, even though both the airport and the port are very important for Croatia and the Mediterranean. Cruise tourism has been increasingly developed in the area. It is also appointed that in the infrastructural field, small scale investments oriented to innovative ICT technologies will serve as a useful tool for: shortening processing time; improvement of information connectivity systems between port and airport; further promotion of intermodal transportation in the area.

As for the case of Pula it should be taken as granted that it is a cruise port that has a sufficient road connection to the railway station and it is located in a close proximity with the airport. Whereas, it should be noted that here is a need for introduction of new infrastructures with a view on cruise tourism growth. Therefore, the development of public transportation, that will be connected to an informative system with the port and airport, seems to be the first step towards effective intermodal planning.

Moreover, as regards Corfu, which stands in an exceptional place for Greek cruise and yachting tourism, it is obvious that integrated synergies between port and nearby airport of Aktion (Preveza, Greece) and Corfu it is of outmost importance, in order to create tailor made opportunities in intermodal transportation. Indeed, it was found the better processing of passengers through integrated ICT tools would improve the connection between Corfu Cruise Terminal and the Airports of Aktion- Preveza and Corfu, through the utilization of soft infrastructures and it could serve as a major facilitator towards an efficient intermodal capitalization scenario for the area.

Eventually, the case of Bari/Apulia stresses the need for the embracement of new ICT advanced solutions that will ensure information connectivity. Indeed, integrated timetabling and innovative info mobility systems between the Ports and Airports of Bari/Apulia will be able to inform passengers on time for departures of ships and flights, on how to reach terminals, as well as for the provided services.

Conclusively, it could be stressed that the prerequisites for the development of intermodal transportation in Adriatic – Ionian Region include improvements in the existing infrastructure; the introduction and establishment of transportation departments for intermodal issues in ports and airport; capitalization of advanced solutions and innovative ICT technologies; and the employment of skilled personnel. Further quantitative and qualitative studies should take place to further analyze the current situation, such as those focus on the passengers' behavior and satisfaction and special emphasis should be placed in the passengers flows and in the evaluation of the true origin-destination passengers.

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