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E-SERVICES AND POSITIONING OF PASSENGER PORTS IN THE CONTEXT OF CRUISE TOURISM PROMOTION

ABSTRACT

The paper positions the passenger sea ports in the context of cruise tourism on the basis of e-services they offer. The e-services of eleven passenger ports are categorized and then quantitatively evaluated by binary and ranking approaches. In general, the port e-services might be categorized according to their functionality as navigational, ship and passenger-related ones, logistics, business, marketing, entertainment, security, safety, environmental, etc. These services can be bidirectional informational and/or transactional. In this paper, only those port e-services related directly to the passengers' needs, within the frame of cruise tourism, are taken into consideration and categorized as core, or as value-added ones, and as informational and/or transactional ones. Then, each of them is assigned an appropriate binary value (0/1), depending on whether the considered passenger port offers the related e-service or not. These values are employed in the evaluation of the analyzed passenger port e-services offered, and as a base for their positioning. The appropriate weights coefficients, obtained by ranking (Saaty method), were used in the process of the considered port final positioning on the cruise tourism e-market. Some additional analyses and recommendations in the direction of further positioning and promotion of the port of Kotor (Montenegro), as rising cruise tourism port (destination), are given as well.

KEY WORDS

cruise tourism, cruise port's positioning, e-services, Saaty method, service marketing

1. INTRODUCTION

The trends on the global market induced ports to operate as enterprises, trying to reach maximum efficiency and competitiveness. Consequently, both freight and passenger ports need to transform the service (product) they offer by using modern information and communication technologies (ICT) [1, 2]. The innovative applications of ICT throughout the ports as enterprises, transform their functioning toward digital economy. The rapidly increased use of internet, intranets, extranets, e-business and e-commerce, social networks, and mobile computing has changed the way in which business is performed in almost all world ports being treated as enterprises. Also, the integration of port resource planning, customer relationship management and knowledge management with e-commerce is vitally important for the strengthening of their marketing approach. There is resurgence of intelligent systems and automated decision systems, both for facilitating security and increasing productivity and competitive advantage of a port. Besides managerial and artificial intelligence issues, ethical and legal issues are also of crucial importance within this context of growing ICT business and social implications everywhere, so as in the proper functioning of the contemporary passenger ports [3].

The web revolution is the most influential technological revolution in the modern era. The access and connectivity provided by the web keep transforming the way in which people work, shop, vote, invest, study, play, interact, and, of course, the way in which they decide when, where, and how to travel around the world and spend their leisure time. The e-services of passenger ports worldwide have changed the consumer behaviour enabling them to efficiently approach new distribution channels, combine different products and services, and ultimately improve the overall quality of lives. For example, a few years ago social networks were a novelty, but today approxi-

mately more than half a million people all around the globe participate in social networking as an instrument used in commerce, socialization, politics, healthcare, finance, entertainment, travel, and pleasure [3, 4]. Passenger ports might find these marketing tools not only to be generating faster and cheaper results than traditional focus groups, but also fostering ports feedback management. The passenger port feedback management should be interested not only in collected information, but also in interaction between customers and the port employees and/or management, and in properly distributing passengers' feedback throughout the port as an organization and destination.

Contemporary high sophisticated ICT solutions and tools have great impact on the entire economy and society, and consequently, on the ports as entrepreneur entities on the global market, and particularly on the passenger (cruise) ports as their special category. Regarding the passenger ports in the context of cruise tourism, along with the e-services which they offer they are under-researched; some rather recently written review and research papers represent efforts in acquiring more data/knowledge in this domain [5-8]. Also, within the following section of the paper the particular research attention is given to some actual flows in the nautical (cruise) tourism market, including the Port of Kotor (Montenegro) as its small, but growing segment in the Adriatic.

2. CRUISE TOURISM TRENDS AND ISSUES

Cruising (roundtrip) refers to tourist trip on a big boat for a period of several days, based on the itinerary or plan of roundtrip [9]. Cruise tourism has emerged relatively late in comparison to other forms of tourism. As product for the global tourism market, cruise tourism appeared in the 1960s.

From the aspect of tourism, a cruise ship plays the role of a floating hotel which may be considered as primary tourist destination, while the passing ports are considered as secondary ones. Cruise tourism provides tourists with vacation, fun and relaxation, docking at several ports and mainly returning to the port of departure. The size of the ship, equipment, and crew is adapted to the target group of tourists.

The broad concept of cruising includes port services of specialized loading and unloading of passengers on cruises that typically have special terminals for this purpose, then the shipyard focused on construction, equipment and repair of ships intended for cruising as well as the supply of ships [10-18].

The number of passengers on cruise travel in the world reached 20.6 million in 2012 (*Figure 1*), and it is estimated to reach 20.97 million passengers in 2013 [19].

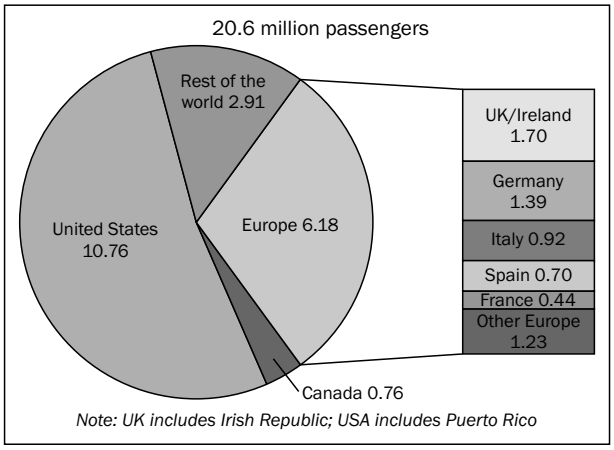

Figure 1 - Number of passengers on cruise travel in the world [19]

Demand for new destinations, increasing price competitiveness, branding cruise companies, shorter trips than in previous period, as well as changes in the profile of consumers in the global tourism market have strongly influenced the continuity of growth in the number of cruise tourism passengers. Accordingly, the marketing approach to cruise tourism has gained in importance, as well as the fact that consumers of cruise tourism services are becoming more critical to the ratio between the quality and price. A new generation of cruisers is designed to meet the needs in growing segmentation of the cruise tourism market. Thus, the cruise tourism is not only a growing market, but also a growing segmented market. Accordingly, we can notice the evolution of the cruise vacation experience since cruise tourism may be described by the concept of experience economy (memory itself becomes the product - the "experience"). The best experience/popularity belongs to the following cruise tourism regions [19]:

1. Caribbean/North America (including Pacific Northwest and Alaska currently);
2. Europe and Mediterranean (largest percent of increased bookings for 2012);
4. Baltic fjords (summer only);
5. Asia/Australia;
6. South America; and
7. Middle East – an emerging region.

There are some specific characteristics of the cruise tourism [16] that attract tourists:

- Passengers have the opportunity to visit different destinations in a short period of time;
- Cruisers have the required autonomy and represent the destination for themselves;
- Cruisers have a staff that is fully committed to a pleasant and enjoyable stay of passengers on board;
- Availability of high quality gastro–offer and entertainment, etc.

Modern development projects in the area of cruise tourism are related to the increase of investment in passenger terminals at cruise destinations in order to meet the needs of a new generation of mega-cruisers. From the European perspective it is important to say that cruising makes significant contribution to the European economy, sustaining jobs in shipyards, creating employment in European ports and supporting overall European tourism development. However, there are also some significant obstacles to future cruising growth given in the economic crisis and rising fuel costs [19].

2.1 PORT OF KOTOR AS CRUISE TOURISM DESTINATION

In cruise tourism, seasonality is less emphasized, which gives the possibility of extended season, which is primarily the focus for Montenegrin tourism development in order to achieve sustainable development, as well as sustainable destination management. Due to constant demand for new destinations and few positioned Adriatic destinations, the Port of Kotor has a relevant potential for branding itself as a distinctive Mediterranean destination. In this field, the competition is growing, so the improvement of technological and organizational issues in the Port of Kotor, as well as the port services and standards are a necessity. This includes investments in infrastructure and superstructure in order to facilitate sustainable development and environmental protection, but also implementation of some measures, which include limitation of the number of tourists from the cruise ships, as well as giving priority to companies that organize cruising in low season. When it comes to cruising destinations such as Kotor, which is in the beginning stage of positioning itself on the global tourism market, there is a need to forestall the insufficiently controlled development of some distinctive cruising destinations (*Figure 1*). The travel experience in some cruise tourism destinations consists of a number of different value chains with many participants involved, from employees at ports, tourist guides, those employed in retail, security guards, etc. This is because tourists tend to have the perception of "tourism experience of great value" only if all participants in the value chain maintain adequate quality of service and if there is perception of an integrated tourism destination product (*Figure 2*).

Besides previously noted, the contemporary ICT components must be included into the port offer, in order to increase the overall quality of its service. How the Port of Kotor is in fact positioned nowadays among the group of several considered European ports due to e-services they offer is analyzed in more detail in the next sections of the paper.

3. CRUISING PORTS POSITIONING ON THE BASIS OF DIGITAL PRESENCE

The purpose of the paper is two-fold: (a) to emphasize the growing demand in the sphere of cruising tourism in order to promote it, and (b) to identify, classify, and evaluate some crucial e-services of the passenger ports in this context. In the previous section some key points on the nautical (cruise) tourism phenomena with reference to the port of Kotor have been given, while in this section - ten most frequent EU passenger ports and the Port of Kotor have been analyzed [5, 6, 21-31] and mutually compared on the web-based ICT resources, i.e. according to the specific e-services they

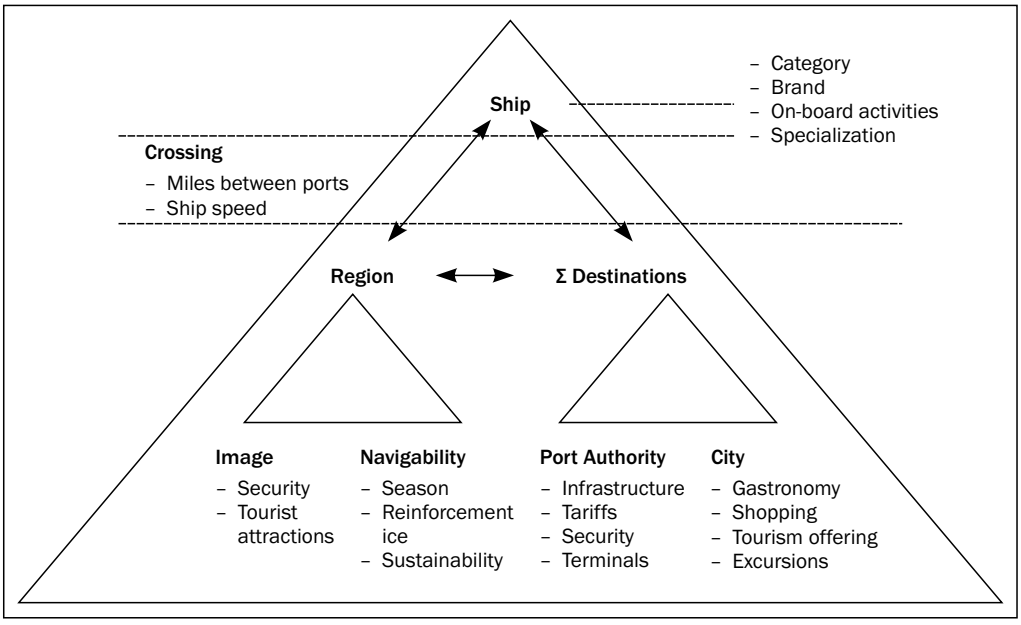

Figure 2 - Cruise tourism as a product from destination perspective [20]

offer. At the end, the accent is given again to the port of Kotor [31], with the intention to position it properly, and to propose the potential solutions for its e-services and an enrichment of the general offer (in the wider sense) in the nearest future.

Within this context, prior to concrete analysis, the difference between ports of call (the geographical point where a cruise ship stops for a short time, especially on a journey [32]), and embarkation (home) ports (the geographic point in a routing scheme from which passengers and/or personnel depart [32]) should also be pointed out. The difference between these types of ports derives in fact from different needs they have to fulfil. There are also hybrid ports. Having this in mind, it must be highlighted that in this paper the considered ports:

- P1: Southampton (UK);
- P2: Limassol (CY);
- P3: Dover (UK);
- P4: Calais (FR);
- P5: Helsingborg (SE);
- P6: Barcelona (ES);
- P7: Palma de Mallorca (ES);
- P8: Venice (IT);
- P9: Genoa (IT);
- P10: Civitavecchia (IT); and,
- P11: Kotor (MN),

are all treated as ports of call. Then, by surveying the official web sites of the above listed cruise ports and previous research work in this field [5-8,21-31], more than seventy e-services have been recognized as relevant, and they are included in further analysis (web analyses have been done in July, 2012). The considered cruise ports e-services have been categorized in five different categories: c – core, v – value-added, i – informational, i/t – informational and/or transac-

Table 1a - E-services of eleven considered passenger sea ports: categories and values (Research realized in July, 2012)

Some passenger's port e-services	c/v	i/t	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11
Tourist information center (virtual desk)	v	i	1	1	0	1	0	1	0	0	0	1	0
Accommodation	c	i/t	1	1	1	1	1	1	1	1	1	1	1
Booking possibilities	v	t	1	0	1	0	0	1	1	1	0	1	0
Transport	c	i/t	1	1	1	1	1	1	0	1	1	1	0
Car parking information	v	i/t	1	0	1	0	0	0	0	0	0	0	0
Information on parking charges	v	i/t	1	0	1	0	0	0	0	0	0	0	0
Map of the location of car parks	v	i/t	1	0	1	0	0	0	0	0	0	0	0
Spaces available (current state)	v	i/t	1	0	0	0	0	0	0	0	0	0	0
Bus information	c	i/t	1	0	1	1	1	1	0	0	0	1	0
Travel tickets	v	i/t	0	0	1	0	0	1	0	0	0	1	0
Discount card	v	i/t	0	0	0	0	0	1	0	0	0	0	0
Taxi	v	i/t	0	1	0	0	0	1	0	0	0	0	0
Renting vehicles	v	i/t	0	0	0	1	0	0	0	0	0	1	1
Renting vehicles on-line	v	i/t	0	0	0	1	0	0	0	0	0	1	0
Rail and coach information	c	i/t	1	0	1	1	1	1	0	0	0	1	0
Sea information	c	i/t	1	1	1	1	1	1	1	1	1	1	0
Airport	c	i/t	1	0	1	1	0	1	0	1	0	1	0
Airport guide: the latest relevant news	v	i/t	1	0	1	0	0	0	0	0	0	1	1
Language	v	i	0	1	0	0	0	0	1	0	0	0	0
Currency	c	i	0	1	0	0	0	0	1	0	1	0	0
Calculator	v	i	0	0	0	0	0	0	0	0	1	0	0
Exchange offices	v	i	0	0	0	0	0	0	0	0	0	0	0
Bank services	v	i	0	0	0	0	0	0	0	0	0	0	0
Maps	c	i	1	1	1	1	1	1	1	1	1	1	1
Leaflets, brochures	v	i	0	1	0	0	0	1	1	1	0	1	0
Restaurants and bars	c	i	1	1	1	1	1	1	1	1	1	1	0
Shopping	c	i	1	1	1	1	1	1	1	1	1	1	0
Duty free shops	v	i	1	0	0	0	0	0	0	0	0	0	0
Malls, markets	v	i	0	0	0	0	0	1	0	1	0	0	0
Shopping on-line	v	i/t	0	1	0	0	0	1	0	0	0	0	0

Table 1b - E-services of eleven considered passenger sea ports: categories and values (Research realized in July, 2012)

Some passenger's port e-services	c/v	i/t	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11
Events	v	i	1	0	1	1	1	1	0	0	0	0	0
Special events tickets	v	i/t	1	0	0	0	0	1	0	0	0	0	1
Nightlife	v	i	1	0	0	0	0	1	0	0	0	0	0
Tickets on-line	v	i/t	1	0	0	0	0	0	0	0	0	0	0
Casinos	v	i	1	0	0	0	0	0	0	0	0	0	0
Casinos on-line	v	i/t	1	0	0	0	0	0	0	0	0	0	0
Excursions	v	i/t	0	1	1	1	1	1	0	1	0	1	0
Sightseeing	c	i	0	0	1	0	1	1	1	1	0	1	0
Gondola rides	v	i	0	0	0	0	0	0	0	1	0	0	0
Walking routes	v	i	1	0	0	0	1	1	0	0	0	1	0
Pedestrian routes	v	i	1	0	0	0	0	1	0	0	0	0	0
Biking zone	v	i	0	0	0	0	0	1	0	0	0	0	0
What to see and do?	c	i	1	0	1	0	1	1	1	1	0	1	0
Top free sights	c	i	0	0	0	0	1	1	0	1	0	0	1
Fisheye	v	i	0	0	0	0	0	0	0	1	0	0	1
Videos	v	i	0	0	0	0	0	0	0	1	0	0	1
Parks	v	i	1	0	0	0	0	1	0	0	0	0	0
Art Galleries	v	i/t	1	0	0	0	0	1	0	0	0	0	0
Museums	v	i/t	1	0	0	0	0	1	0	0	0	0	0
Theatres	v	i/t	1	0	0	0	0	0	0	0	0	0	1
Sports	v	i/t	1	0	0	0	0	0	0	0	0	0	0
Weather	c	i	0	1	1	1	1	1	1	1	0	0	0
Cruise passenger information	c	i	1	1	0	1	0	1	1	0	1	0	1
Cruise terminal(s) location (map)	c	i	1	0	0	1	0	1	0	0	0	0	1
Cruise terminal(s) facilities	c	i	1	1	0	1	0	1	0	0	0	0	0
Crew information	v	i	1	0	0	0	0	0	0	0	1	0	0
Crew members information	v	i	1	0	0	0	0	0	0	0	0	0	0
Seafarers center	v	i	1	0	0	0	0	0	0	0	0	0	0
Telecommunications	c	i	0	0	0	1	0	1	0	0	0	0	0
Telephone	c	i	0	0	0	0	0	1	0	0	0	0	1
Internet access	c	i	0	0	0	0	0	1	0	0	0	0	1
WiFi centers	c	i	0	0	0	1	0	1	0	0	0	0	0
Visitors with disabilities	v	i	1	0	0	0	0	0	0	0	0	0	0
Parking	v	i	1	0	0	0	0	0	0	0	0	0	0
Toilets	v	i	1	0	0	0	0	0	0	0	0	0	0
Shop mobility	v	i/t	1	0	0	0	0	0	0	0	0	0	0
Environmental protection	v	i	0	0	0	0	1	0	0	0	0	0	0
Links	c	i	1	1	1	1	1	1	1	1	1	1	0
Other	v	i	1	1	1	1	1	1	1	1	1	1	1

tional ones, and t – transactional. Then, for each of the considered ports it has been identified whether the port has (1) or has not (0) a certain e-service within its e-offer. The list of e-services and the corresponding binary values of each of the eleven examined passenger ports are given in *Table 1* (see segments 1a and 1b).

In the first step, for each of the ports, the overall scores (sums of values equal to one) for value-added e-services have been calculated in Excel by formula (1):

=SUM(IF(D2=1,IF($B2="v",1,0),0)) (1)

The obtained positions of the ports due to the value-added e-services they offer are shown in *Figure*

3. Similarly, in order to make the ports mutual positioning, according to the number of transactional, or informational and/or transactional e-services that they make available to the passengers, the following formula has been applied (2):

=SUM(IF(D2=1,IF(OR($C2="t",$C2="i/t"),1,0),0)) (2)

The positions of the ports gained by the calculus based on formula (2), according to the number of transactional, or informational and/or transactional e-services which they offer, are shown in the form of the perception map in *Figure 4*.

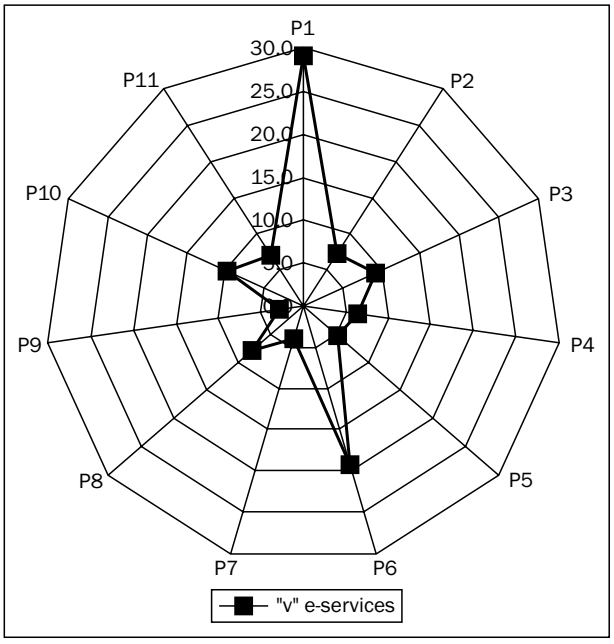

Figure 3 - Positions of passenger ports due to the value-added e-services

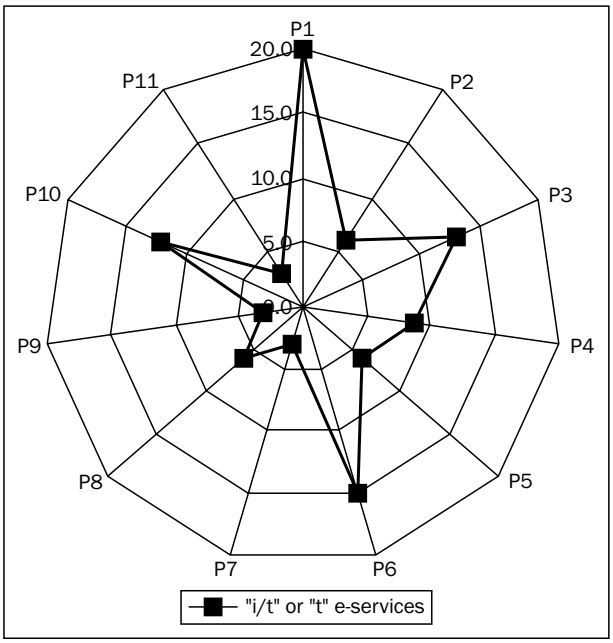

Figure 4 - Positions of passenger ports due to the transactional and informational/transactional e-services

In the third analyzed case, the situation is a little bit more complex. Here, namely, there is an intention to position (rank) the considered passenger ports according to all the previously identified types of e-services they offer: c – core, v - value-added, i – informational, i/t – informational and/or transactional ones, and t – transactional. It is clear: if a certain port offers an e-service, that e-service will correspond to the numerical value 1, and otherwise, it will correspond to the numerical value 0. However, the main question is: how will the different types of e-services be pondered, or how will they impact the total scores? In order to answer this question, the authors interviewed ten respondents who are experienced in passenger port operations, sea ports marketing, and (cruise) tourism, and who have high level of logical thinking to rank the considered types of e-services according to their importance to the passengers and ports development. It is important to emphasize here that the estimation, or opinion, of only one highly qualified expert may be more important than the estimates made by a number of inexperienced persons [33]. However, for the purpose of this research, the highly qualified and experienced respondents have been asked to compare each pair of different types of passenger port e-services (c, v, i, i/t, and t) according to the Saaty [34] scale by using the grades: 1 - same importance; 3 - slightly more importance, 5 - moderately more importance, and 7 - strongly more or absolute importance of the first over the second considered criterion; or, by the corresponding reciprocity values depending on the mutual importance of the compared elements composing certain criteria pair(s). Although ten competent persons were asked to create the Saaty matrices, only six matrices were taken into further consideration as the consistent ones. The selected Saaty matrices are given in *Table 2*.

By the normalized eigenvector values calculus, the ranks of the considered types of e-services have been calculated, along with the values of the largest eigenvalue λ_{max}, and the consistency index CI, while the random index RI is equal to 1.12 in all cases, since the number of criteria is constant and equal to five. It is obvious (*Table 2*) that all CR values, for each considered matrix, are less than 0.1, which is to be fulfilled in order to provide a satisfying degree of the Saaty matrix consistency [34].

The overall rank of the considered types of e-services which the analyzed ports offer is calculated by the standard statistical procedure and it is given in the last column of *Table 3* [33, 35]. It is based on subjectively estimated importance of the considered types of e-services by the interviewed experts. More explicitly, the idea of evaluating the final rank or normalized weight coefficients per each type of e-services is associated with the sum of ranks of each criterion c_q, with respect to the estimates of the respondents:

Table 2 - Saaty matrices formed by respondents and consistency indices

Respondent 1						Respondent 2					
	c	v	i	i/t	t		c	v	i	i/t	t
c	1	1/5	1	1/5	1/7	c	1	1/3	1/3	1/5	1/7
v	5	1	3	1/3	1/5	v	3	1	3	1/3	1/5
i	1	1/3	1	1/5	1/7	i	3	1/3	1	1/5	1/7
i/t	5	3	5	1	1/3	i/t	5	3	5	1	1/3
t	7	5	7	3	1	t	7	5	7	3	1
λ_{max} = 5.22473; CI = 0.05618; CR = 0.05016						λ_{max} = 5.28557; CI = 0.07139; CR = 0.06374					
Respondent 3						Respondent 4					
	c	v	i	i/t	t		c	v	i	i/t	t
c	1	1/3	1	1/5	1/7	c	1	1/5	1	1/5	1/7
v	3	1	1/3	1/3	1/5	v	5	1	3	1/3	1/5
i	1	3	1	1/3	1/5	i	1	1/3	1	1/5	1/7
i/t	5	3	3	1	1/3	i/t	5	3	5	1	1/5
t	7	5	5	3	1	t	7	5	7	5	1
λ_{max} = 5.40989; CI = 0.10247; CR = 0.09149						λ_{max} = 5.34840; CI = 0.08710; CR = 0.07777					
Respondent 5						Respondent 6					
	c	v	i	i/t	t		c	v	i	i/t	t
c	1	1/3	1	1/5	1/7	c	1	1/3	1	1/5	1/7
v	3	1	1	1/3	1/5	v	3	1	3	1/3	1/5
i	1	1	1	1/5	1/7	i	1	1/3	1	1/5	1/7
i/t	5	3	5	1	1/5	i/t	5	3	5	1	1/5
t	7	5	7	5	1	t	7	5	7	5	1
λ_{max} = 5.25864; CI = 0.06466; CR = 0.05773						λ_{max} = 5.28520; CI = 0.06366; CR = 0.06366					

$$c_q = \sum_{r=1}^{6} c_{qr},\ q = \overline{1,5} \tag{3}$$

where:

- c_q – is the sum of ranks of each e-service type, while q is the number of different types of e-services (here 5), and r is the number of experts, or respondents (here 6); and,
- c_{qr} – is the rank of the q-th criterion estimated by the r-th respondent.

Now, the average weight coefficient for each of the analyzed type of the e-services can be calculated by the following formula:

$$\bar{w}_q = \left[c_q / \sum_{q=1}^{5} c_q \right]^{-1}. \tag{4}$$

Finally, the normalized average weight coefficients are to be calculated by formula (5):

$$\bar{w}_{qn} = \bar{w}_q / \sum_{q=1}^{5} \bar{w}_q. \tag{5}$$

In order to examine the level of consistency of the respondents' estimates (*Table 2*), as the last step of the e-service different types ranking, the concordance coefficient W is to be calculated as well, through the following calculus (6):

$$W = 12\,S / r^2 q(q^2 - 1) \tag{6}$$

where:

$S = \sum_{q=1}^{6} \left(c_q - \sum_{q=1}^{6} c_q \right)^2$ – is analogue to the variance of the ranks;

Table 3 - Ranks of different types of passenger port e-services

E-service types	Respondents						$\bar{w}_q$	$\bar{w}_{qn}$	Rank
	R1	R2	R3	R4	R5	R6			
c	5	5	5	5	5	5	3.000000	0.087848	5
v	3	3	4	3	3	3	4.736842	0.138707	3
i	4	4	3	4	4	4	3.913043	0.114584	4
i/t	2	2	2	2	2	2	7.500000	0.219620	2
t	1	1	1	1	1	1	15.000000	0.439240	1

r – is the number of the respondents (here 6); and,

q – is the number of criteria, or the number of the e-service types (here 5).

Now, the smallest value of W, i.e. w_{min} is to be calculated by formula (7):

$$W_{min} = \chi^2_{\alpha,v}/r(q-1) \quad (7)$$

where:

$\chi^2_{\alpha,v}$ is the critical chi-square statistics, found in the table [33, 35, 36] by assuming the degree of freedom $v = 5 - 1$, and the significant level $\alpha = 0.010$. Here, it is . By taking into account the previous assumptions $w_{min} = 0.553$, while $W = 0.972$. Since the condition $w_{min} < W$ has been satisfied, it implies that the estimates of the respondents are quite consistent.

Finally, on the basis of the final values of normalized weight coefficients per each type of e-services (*Table 3*, i.e. by means of $\bar{w}_{qn}$ values), it becomes possible to calculate the positions of the eleven examined passenger ports by the following formula created in Excel (8):

```
=SUM(IF(D2=1,IF($B2="v",0.14,0.09),0),IF(D2=1,
  IF($C2="t",0.44,IF($C2="i/t",0.22,0.11)),0))   (8)
```

This means, as in the previously explained cases, that if the observed passenger port offers a certain e-service it is assigned 1, and otherwise, if it does not offer such service, it is assigned 0. Furthermore, if the noticed e-service is a core one (c), it will be pondered by 0.09, but if it is a value-added one (v), it will be pondered by 0.14. If a certain e-service is informational, it will be multiplied by 0.11, if it is informational and/or transactional (i/t), it will be pondered by 0.22, and finally, if it is transactional (t) one, it will be pondered by 0.44. The respective perception map of the positions of the analyzed ports from the aspect of e-services they offer and on the basis of the six experts' responds is shown in *Figure 5*. The obtained positions might be treated as relevant indicators of their competitiveness at the corresponding passenger (cruise) port e-market.

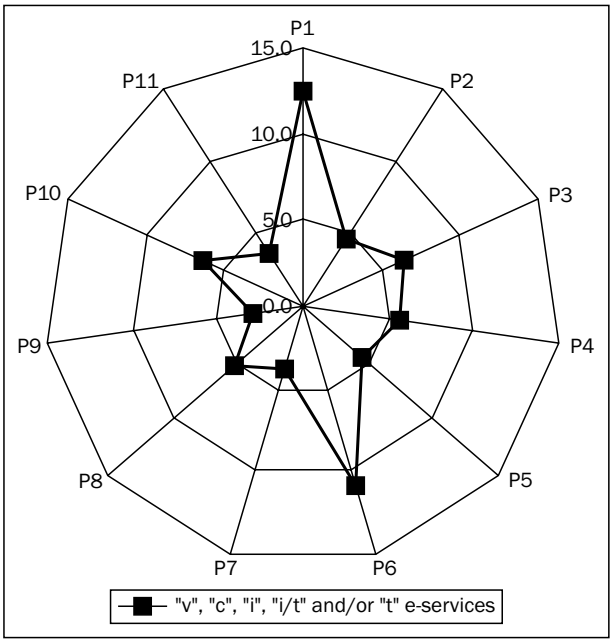

Figure 5 - Positions of cruise ports according to all considered e-services which they offer to the passengers

The obtained final positions of the analyzed cruise ports according to e-services which they offer (on the basis of web surveys realized in July, 2012) are given in *Table 4*, as well.

Table 4 - Positions of the analyzed ports according to available web-based e-services

Rank	Port	Numerical values (see Eqv. (8))
1	P1: Southampton (UK)	12.47
2	P6: Venice (IT)	10.82
3	P3: Dover (UK)	6.50
4	P10: Genoa (IT)	6.44
5	P4: Civitavecchia (IT)	5.69
6	P8: Helsingborg (SE)	5.28
7	P2: Barcelona (ES)	4.66
8	P5: Calais (FR)	4.51
9	P7: Limassol (CY)	3.75
10	P11: Kotor (MN)	3.70
11	P9: Palma de Mallorca (ES)	2.88

These positions (by this research obtained as *final* port rank) could not be treated as "absolutely" right ones, or as indeed "final" ones, but this survey should be used as an idea: how cruise ports (re)positioning might be done, or as the starting base for further more detailed and rigorous investigation in this domain. On the basis of these results, the port management, other responsible entities and/or stakeholders might get insight into what is to be done toward positive repositioning of the ports and through enriching their web-based e-service offer to the cruisers. It is to be mentioned as well, that there are some additional e-services that can be found on the web sites of some relevant passenger ports which are not included into this research. Ports of New York [37] and Rotterdam [38] e.g., supply the customers with some e-services that are not included into the list of different e-services used in this research work. Such e-services are: detailed information about passenger embarking/disembarking (embarking from buses, limousines, taxies, private vehicles, and disembarking upon returning from the cruise in opposite order), etc. Also, the mentioned ports (New York and Rotterdam) offer actual lists of cruiser calls, as well as relevant nautical information about the port and the cruise terminals. Port of Rotterdam e.g. offers ship repair capabilities within cruise facilities and services. Some ports offer possibilities of authorisation

for some special (intranet or extranet) services, some ports offer possibilities of authorisation for different types of green cards, etc. So, all these should be also included into further research work in this field.

4. RESEARCH RESULTS AND PORT OF KOTOR (RE) POSITIONING

There are many quantitative methods that can be used to measure the degree of port competitiveness and allow their mutual comparison and positioning on the market. The detailed survey of their applications in sea port positioning is given in [36]. In this paper the combination of binary approach for the purpose of sublimation of a rather large number of employed criteria (i.e. cruise port e-services) and Saaty method for ranking particular categories of considered criteria, or e-services here (core, value-added, informational, informational/transactional, and transactional) have been used. On the basis of the numerical results obtained by conducting these quantitative approaches and the related quantitative analysis of the passenger (cruise) port e-services, primarily in the function of cruise tourism promotion, it becomes obvious that the Port of Kotor is averagely positioned among analyzed ports according to the value-added e-services it offers (see *Figure 3*), and that it is rather low positioned for other and all (together) treated e-services (see Figures 4 and 5). One of the aims of the paper is to offer possible directions toward improving this situation, i.e. toward repositioning of the Port of Kotor and making it thus more competitive on the respective cruise tourism market. However, the following recommendations might be offered:

- Concerning the value-added e-services offered by the eleven ports analysed in this paper, the Port of Kotor is on the seventh position, which is an average score. The Port of Kotor is on this position owing to the following value-added services it offers: renting vehicle possibilities, airport guide existence, offering the latest relevant (local) news, special events tickets offering, etc. As models or *ideal* ports toward which the Port of Kotor should be repositioned in a positive sense are ports of Southampton and Venice in the first place (see *Table 1* for more detailed insight into their value-added e-service offers).
- In case of the cruise ports mutual comparison or positioning according to the informational and/or transactional, or exclusively transactional e-services, the Port of Kotor is at the lowest position. It says that it offers the smallest number of such e-services, i.e. only: those about taxi services and airport services in general, and some information concerning local museums. Additionally, the information are (only) informational, not transactional, which is undoubtedly another huge qualitative disadvantage of Kotor as a cruise port of call.
- According to all types of considered e-services (see *Figure 5*), the Port of Kotor is on the tenth position, which is a pretty *poor* score, and it speaks in favour of immediate need for its repositioning towards a "better score". As models for its repositioning in a positive sense the ports of Southampton and Venice should be considered again, and some of e-services they offer (see *Table 1*) should be included into the Port of Kotor offer as a growing Adriatic/Mediterranean cruise destination. For instance, a broad palette of new services should be included into the Port of Kotor e-offer, such as: accommodation booking possibilities; some relevant sea information; information on exchange offices; news about cultural events; information about galleries; Wi-Fi access availability information; special information for visitors with special needs (disabilities), environmental protection information – these, of course, imply physical existence of related opportunities.

Within the Conclusion, some general recommendations, along with a few very precise quoted ones, obtained on the basis of quantitative analysis, aiming cruise port ICT modernisation, which can be applied in a certain manner to the Port of Kotor as well, are pointed out, in order to reach the responsible bodies for providing its sustainable development as a rising cruising destination in the Mediterranean.

5. CONCLUSION

The digital revolution has changed the business and consumer trends in general [3-6]. Consequently, it has certain reflections to the passenger ports and to the passengers' expectations in the context of cruise tourism. With advent of ICT-enabled smart networking business models and the passenger port services are nowadays considered as "augmented" procedures, since their traditional physical nature is on the road to be overplayed by informational and electronic transactions components. However, it is not to be forgotten, that cruising is still a physical act and all passenger (cruise) ports still need passenger terminals and all required, following, real-physical capacities and features. Thus, the ICT capacities are the *tip of the iceberg*, requiring adequate passenger port infra and suprastructural capacities, adequate organizational, strategic development and numerous other structural, financial, organizational and environmental issues which in fact form the core base of ICT virtual superstructures. Furthermore, a new, unique taxonomy for systematic identification, assessment and selection of individual passenger port e-services is to be adopted and it is to be based on additional, more extensive research and

evaluation efforts in this domain [5, 6]. In line with the previously noted, the comparative analysis of the availability of e-services and traffic intensity should be realized as part of next research steps in this domain. Besides these rather general conclusions, on the basis of research conducted in the paper, the following more precise conclusions might be derived as well:

- Some relevant e-services of eleven analyzed cruising ports in EU, including the Montenegrin Port of Kotor as cruising one, have been identified and categorized;
- The relatively large number of identified e-services have been sublimed per each category by simple binary approach, as a way of data pre-processing for the following quantitative and qualitative analysis;
- Multi-expert choice expressed in the form of Saaty matrix and the corresponding mathematical analyses [33-36] have been used for ranking the considered e-service categories;
- The *final* rank of the analyzed cruise ports is determined by combining binary and Saaty approaches (see *Table 4* for final numerical results);
- On the basis of conducted calculus for each (all) type(s) of considered e-services, it becomes clear that ports: Southampton and Venice should be treated as models or *ideal* cruise ports for positive repositioning of all the other ports considered in this paper on the (global) cruise port market (see *Table 1* for some more details on e-services they offer); and,
- The Port of Kotor should be repositioned according to all explored categories of e-services especially regarding the transactional ones.

These observations should be used as a particular base for further more detailed and rigorous investigation in this challenging sphere, concerning cruise ports development and their proper (re)positioning at the (global) permanently and rapidly developing cruise port market.

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SAŽETAK

E-USLUGE I POZICIONIRANJE PUTNIČKIH LUKA U KONTEKSTU PROMOCIJE KRUZING TURIZMA

U ovom radu je izvršeno pozicioniranje putničkih luka, u okvirima kruzing turizma, na osnovu e-usluga koje one pružaju korisnicima. E-usluge jedanaest putničkih luka su kategorizirane, a potom kvantifikovane binarnim pristupom, uz korišćenje metoda rangiranja. U opštem slučaju, lučke e-usluge se mogu kategorizirati prema funkcionalnosti kao: navigacione, usluge vezane za brod i putnike, logističke, poslovne, one koje se odnose na zabavu, marketing, bezbjednost, sigurnost, zaštitu okoliša i dr. Ove usluge mogu biti biderekcione informacione i/ili transakcione. U radu, jedino one lučke e-usluge koje su direktno vezane za potrebe putnika, uzete su u razmatranje, kategorizirane kao osnovne i one sa dodatom vrijednošću, te kao informacione i/ili transakcione. Potom je svakoj od njih dodijeljena odgovarajuća binarna vrijednost (0/1), zavisno od toga da li analizirana luka ima u svojoj ponudi određenu e-uslugu ili ne. Ove numeričke vrijednosti su korišćene pri procjeni e-ponuda analiziranih luka, te su na osnovu njih luke kasnije pozicionirane. Odgovarajući ponderi, dobijeni na bazi rangiranja (Saaty-jev metod), primijenjeni su u procesu finalnog pozicioniranja luka na e-tržištu kruzing turizma. Takođe su date dodatne analize i preporuke u smislu boljeg pozicioniranja i promocije luke Kotor (Crna Gora), kao rastuće destinacije kruzing turizma.

KLJUČNE RIJEČI

kruzing turizam, pozicioniranje kruzing luka, e-usluge, Saaty-jev metod, marketing usluga

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