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## Measuring the Economic and Social Contribution of Cruise Tourism Development to Coastal Tourist Destinations

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**Abstract:**

**Purpose:** The main aim of this study is to identify the groups of indicators that can be applied to estimate the economic contribution of cruise ship tourism to the coastal tourist destinations. The research questions are as follows: 1) What are the areas where studies on the cruise ship tourism market in the world are conducted? 2) What entities on the cruising market are engaged in conducting such studies? 3) What entities are the beneficiaries of studies on the cruising market? 4) What type of quantitative and qualitative indicators are used in analysing the economic impact of the cruising market on social and economic development of coastal regions? 5) What groups of indicators used in studies on the cruising market may be interesting for the beneficiaries of these studies?

**Design/Methodology/Approach:** The methods applied are literature review, exploration method of data, desk research method and comparative analysis. A model of a set of indicators dedicated to specific entities operating on cruise ship market and the list of quantitative and qualitative indicators, social subjective indicators, and indicators of interdependence is used.

**Findings:** The analysis of reports regarding cruising market studies conducted in various regions worldwide proves that studies are performed based on various methodologies, at random, without any standardized research model, and therefore, it is difficult to conduct comparative analysis and assess the phenomena in a temporal perspective (dynamic analysis). The results indicate the wide scope of indicators that can be grouped in packages dedicated to individual entities involved in cruise ship market.

**Practical Implications:** The modelling concept of the proposed economic indicators can be used in any configuration by the authorities of seaports, cruise ship-owners, suppliers of goods/services and local governments.

**Originality/Value:** Traditional methodology of assessment of economic and social contribution of cruise market to the local and national economy refers to three basic measures, i.e., direct, indirect and induced impact. The study offers an in-depth insight into modelling of groups of indicators adopted to various entities.

**Keywords:** Economic contribution, cruise tourism, coastal destinations, economic indicators.

**JEL codes:** M21, L99, L83, C38, C81.

**Paper type:** Research study.

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## **1. Introduction**

At present, the cruising market belongs to the fastest developing segment of the tourist market. According to CLIA Europe (2018) in Europe, the total economic impacts of the cruise industry showed €47.9 billion in total output, €19.7 billion in direct spending by cruise lines and their passengers and crew, 403,621 jobs, and also €12.8 billion in employee compensation. Moreover, according to the Cruise Line International Association (CLIA), the annual average growth in demand for ocean cruise travels is estimated at 7.2% per annum (FCCA, 2013), whereas UNWTO (2015) indicates that in other segments of the tourist market the increase amounts to ca. 4% annually. As a result of such dynamic growth of the cruising market, it became the subject of interest among numerous researchers representing various disciplines, such as: economics, sociologists, ecologists, geographers, statisticians, econometricians, architects and other. They conduct their studies not only for scientific purposes, but also on behalf of entities operating on the cruise ship tourism market, i.e., seaport authorities, marine agencies, cruise line owners, tour operators, local governments, but also pro-ecological organizations and numerous other entities indirectly related to the cruise ship tourism services. The entity commissioning the study and the entity conducting the study decide on the purpose, scope and methodology of research as well as on the selection of indicators representing best the analysed issue.

The main aim of this study is to identify the groups of indicators that can be applied to estimate the economic contribution of cruise ship tourism to the coastal tourist destinations, i.e., quantitative indicators, qualitative indicators, social metrics subjective, and indicators of interdependence. The following research questions have been raised: 1) What are the areas where studies on the cruise ship tourism market in the world are conducted? 2) What entities on the cruising market are engaged in conducting such studies? 3) What entities are the beneficiaries of studies on the cruising market? 4) What type of quantitative and qualitative meters are used in analysing the economic impact of the cruising market on social and economic development of coastal regions? 5) What groups of indicators used in the studies on the cruising market may be interesting for the beneficiaries of these studies?

At the same time, two research hypotheses have been formulated:

*H<sub>1</sub> – the assessment of economic impact of the cruise ship market on the social and economic development of coastal areas in many regions in the world is still conducted at random and based on various methodological methods, which adversely affects the comparative analyses.*

*H<sub>2</sub> – Within research on the assessment of economic impact on the development of coastal regions there are no standardized models of research indicating the methodology of research and the range of indicators adapted to the needs of various interest groups/entities.*

The volume of income generated from the sale of goods and services to cruise travellers in various seaports diverge significantly. Therefore, detailed analysis and no generalization of the results of research conducted in other regions are very important for the accountable development plan. Every coastal tourist region involved in cruise ship tourism services, treating this segment of tourist market as crucial for the development in their region, should conduct regular studies on the cruise travellers' purchasing behaviour, applying well-trying indicators and research methods. Only then would it be possible to position themselves and compare with other competitive coastal regions in this respect.

Frequently, studies and positioning is held based on very simple statistics, e.g. referring only to the number of cruise ships handled or the number of incoming cruise travellers. And, de facto, significant number of cruise ships and cruise travellers does not always translate into larger income from the sale of goods and services, since more and more often cruise travellers purchase a package of services at the ship-owner's and during shore excursions do not incur any or incur only insignificant costs. The city of Dubrovnik is a perfect example of such destination; a typical port-of-call within the Mediterranean Sea region, with difficulties in the tourist season regarding significant negative impact of seasonality, such as: giant traffic jams, crowds, noise, loads of rubbish, lack of vacant seats in restaurants, etc.

As a result, travellers have no possibility to purchase beverage or meals in local restaurants as well as local souvenirs (Kizielewicz and Luković, 2015). Therefore, both seaport authorities and local governments in CTD are interested in research results related to the effective methods for eliminating the adverse impact of seasonality and for extending the tourist season, so that the economic effects would be more bearable for the entrepreneurs and local community (Delgado, 2017). The results of such research are used to determine the development directions and strategies, but also to adapt the offer to the travellers' needs (Esteve-Perez and Garcia-Sanchez, 2017).

## **2. Theory and Literature Review**

In economic literature, within the economics of tourism, little attention is still paid to issues related to indicators used in studying the level and structure of consumption in the sector of tourist services and the place of tourist consumption against the background of "classic consumption model". The literature still provides insufficient information on the methods for estimating the economic benefits from tourist consumption in cruise tourist destinations for entities involved in rendering services on the cruise ship tourism market.

As a result of the dynamic development of cruising market, observed for over a decade, it has become the subject of research among many scientists and research institutions. A large part of research refers to studies on the impact of cruising market on the economic development of coastal regions (Oxford Economics, 2014;

O'Sullivan, 2018; Klein, 2011; IFC, 2014; Gargano and Grasso, 2016; Marksel *et al.*, 2016; CLIA, 2017; Douglas *et al.*, 2018).

A significant part of research reports also refers to seaport development and problems they face in order to meet the challenge related to the sustainable development and restrictive laws (Papadopoulou and Sambracos, 2016; Martin Associates, 2017; InterVISTAS, 2017; Pallis, 2015). A number of studies also refer to the impact of cruising market on the local community, both negative and positive (Gabriel *et al.*, 2012; Klein, 2011; Ćosić and Favro, 2016; Altvorst, 2017; Jones *et al.*, 2016; Gutberleffennia, 2016).

Recently, more and more studies are conducted, regarding the impact of cruising market on the natural environment (González, 2018; O'Brien, 2014; Klein, 2011; Lester, 2016; Johnson, 2002; Butt, 2007; Tzannatos and Stournaras, 2015).

We can also observe that more and more entities operating on the cruising market commission research institutions to conduct such studies, to monitor the economic impact of cruise travellers' expenditures during their stay in coastal destinations on the development of seaports (Lee and Lee, 2017; Hilaire, 2007; Torbianelli, 2012; Tamajón and Valient, 2012; ACA, 2016), or coastal regions (IFC, 2019; FCCA, 2018; FCCA, 2018; Simmons, 2016; Gabe, 2017) the whole country (NCDC, 2019; O'Sullivan, 2018; NSV Government, 2018; Kovalevskiene *et al.*, 2017), or continent (BREA, 2012; CLIA, 2018; CLIA Australasia, 2017; Seidl *et al.*, 2006).

Moreover, researchers thoroughly analyse the structure of expenditure incurred by travellers, both on board the cruise ships (CLIA, 2019; CLIA Europe, 2017; 2018), but first of all, in visited CTD (Cruise Tourist Destinations) during shore excursions so called "shorex". The knowledge makes it possible to estimate the goods and services with the highest demand among cruise travellers and crews, which enables adapting the offer to the needs and expectations of potential consumers (Lee and Lee, 2017). Certainly, while analysing the results of such studies we need to take into account the specificity of CTD and the function of cruise traveller performed in a particular destination. Kizielewicz (2016) defines four main roles played by a cruise traveller during cruise voyage, i.e., excursionist, cruise passenger, tourist, resident. The type of tourist destination has a significant impact on the role played by cruise travellers at a particular moment, which means that they purchase a different basket of goods and services in the home port, another in the port-of-call and yet another in the incoming port. However, if cruise travellers remain on board the cruise ship in the port, from the statistical perspective, they become passengers.

It should be noted that studies are also conducted by cruise ship-owners, but their aim is to learn the travellers' level of satisfaction from the voyage and the level of expenditure incurred on board the ships and outside. The knowledge is necessary for ship-owners to develop the pricing policy and marketing strategy to win the largest possible number of travellers and increase the value of sales. Moreover, in order to

generate higher income for their corporations, ship-owners decide to purchase their own tourist islands where they take their passengers by ship, such as Great Stirrup Cay and Harvest Caye Islands owned by the Norwegian Cruise Line, and Perfect Day at CocoCay and Labadee owned by the Royal Caribbean International, Half Moon Cay owned by Holland America Line and Princess Cays, owned by Carnival. As a result of such activities, the expenditure of cruise travellers on land goes towards the shipping company budget, and not to the suppliers of goods and services in coastal destinations.

Regular studies on the cruising market are conducted by well-known organizations related to the cruising market, such as: *Florida Caribbean Cruise Association* (FCCA), *Cruise Line International Association* (CLIA), Cruise Baltic or Med.Cruise, but also research institutions such as Observatory on Tourism in the European Islands (OTIE), *Business Research and Economic Advisors* (BREA), McDowell Group and Dickey Consulting Services (DCS), Research Centre for Coastal Tourism and AECOM. The changes in tourist consumption on the cruising market as well as the trends are also monitored by the *United Nation World Tourism Organization* UN WTO and the European Commission.

### **3. Quantitative and Qualitative Meters for Assessing the Impact of Cruising Market on the Social and Economic Development**

#### **3.1 Economic Indicators**

One of the most popular indicators (Sztumski, 1995) of the level of consumption and the citizens' standard of living is GDP per capita. The Gross Domestic Product (GDP) per capita is treated as a measure of the country's economic development and the citizens' standard of living in this country per one citizen.

Economic indicators classified as a group of quantitative indicators, which can be expressed in different measures, e.g., kilograms, litres, number of pieces, number of persons, monetary values, time units, etc., allow to estimate the size or value. Around the world, there are numerous institutions trying to assess the economic impact of the cruising market on the development of coastal cities and regions by applying various methodologies. The traditional methodology refers to three basic measures, direct impact, indirect impact and induced impact. The most significant discrepancies occur within elements taken into account at calculating these indicators. The differences result *inter alia* from the nature of tourist destination and preferences of entities conducting the studies.

Unfortunately, in the absence of unified measurement methodology the results of studies related to the same segment of the market in the same regions, but conducted by different entities, diverge significantly. It seems that all entities participating in the cruising market should be interested in the results which reflect the real situation on the market and allow to monitor the development and to position particular

destinations. In these circumstances it seems justifiable to develop unified methodologies for assessment of passenger spending and economic impact. According to Maritime Institute in Gdańsk (Kowalczyk, 2017) the measures should be clearly defined considering economic factors, socio-cultural and environmental factors, governance, external changes or threats.

By definition, created by CLIA Europe the total economic impact should be considered as the sum of the direct, indirect and induced impacts of the cruise industry. Due to that, each €1 million in direct cruise industry expenditures generated €2.43 million in business output, and about 21 jobs paying an average annual wage of approximately €31,650 (CLIA Europe, 2018).

The direct economic impacts refer to "the production, employment and employee compensation that were generated in businesses that supplied goods and services to the cruise lines and their passengers and crew. The direct impacts also include the compensation paid to the European employees of the cruise lines" (CLIA Europe, 2018). Moreover, "the indirect impacts result from the spending by the directly impacted businesses for those goods and services they require to support the cruise industry. The induced impacts result from the spending by the impacted employees for household goods and services. Thus, the indirect impacts primarily affect business-to-business enterprises while the induced impacts primarily affect consumer businesses" (CLIA Europe, 2018).

While total output in cruise industry should be understood as all intermediate inputs, taxes net of subsidies, net surplus (profits, net interest, dividends and other items) and employee compensation (CLIA Europe, 2018). The economists always study a very important economic indicator, the direct employment impacts. According to the methodology used by the the Bureau of Economic Analysis (BEA), which prepares reports on behalf of CLIA, the direct employment impacts resulting from the direct industry spending is estimated by dividing the wage compensation estimates by industry - and state - specific annual compensation rates (CLIA, 2019).

It is worth analysing the assessment of cruise tourism economic impact on the economy based on the report developed by the Australian Department of Foreign Affairs and Trade, Carnival Australia and IFC, a member of the World Bank Group. They prepared a report of the economic impact of cruise tourism to the Republic of Vanuatu (a Pacific island country located in the South Pacific Ocean). They applied for estimation of the direct economic impacts four elements: 1) direct spend by passengers (obtained through the survey), 2) direct spend by crew members (obtained through the survey), 3) direct spend by cruise companies on tours on behalf of passengers, 4) other expenses by cruise companies (IFC, 2014).

On the other hand, in order to assess the direct economic spend by (or on behalf of) passengers they use the following parameters: 1) number of people on board; 2) number of passengers going onshore on the day of the survey; 3) number of crew

members going onshore on the day of the survey; 4) mean spend for people who went onshore (IFC, 2014).

In order to assess the economic impact of a particular sector of activity on the development of economic entities or administrative units, various indicators are applied (Dooms, 2015), the selection of which is conditional upon the character of particular entity who commissioned the analyses (Table 1). For example, to assess the economic contribution of cruise tourism for the seaports researchers apply indicators related to the number of passengers serviced in the port, as well as the number of handled cruise ships (Papaefthimiou *et al.* 2017), the number of stopover days and indicators related to the annual income from the cruise ship service charges. The analysis also refers to the number of cruise ship calls with regard to ferries and cruise ships.

The seaport authorities should seek social acceptance for their economic activities pursuant to the idea of Corporate Social Responsibility. On the one hand, the seaport environment includes national authorities and local government who expect a valued added from the port activities provided in the form of taxes (Dooms *et al.*, 2015), as well as new workplaces. On the other hand, the port environment includes seaport inhabitants who are frequently employed in the port as employees or run their own economic activities supporting the port operations. The port activities are also observed by private investors who look for interesting places for their investments.

**Table 1.** *Quantitative indicators for assessment of cruise tourism contribution to CTD*

Indicator symbol <sup>1)</sup>	Indicator description <sup>1)</sup>	Measurement unit
TN_P	Total number of passengers handled in a cruise port	Pax
N_CS	Number of cruise ships handled in a cruise port	Ships(Units
N_CC	Number of cruise ships calls in a cruise port	Calls
T_CM_V	Total crew members visits to CTD	Persons/Visists
CP_CS	Number of cruise travellers onboard cruise ships	Pax
CP_CTD	Number of cruise travellers in CTD per a year	Persons/Visists
I_CSC	Annual income from cruise ships charges in a cruise port	Million USD
N_CP_CTD	Number of cruise travellers in CTD	Persons/Visists
DS_CT	Demographic structure of cruise travellers	Share %
VG_CTD1	Volume of consumer goods and services consumed by cruise travellers in CTD Type I (home ports)	Kilogram / Piece / Liter /Ton / CT
VG_CTD2	Volume of consumer goods & services consumed by cruise travellers in CTD Type II (ports of call)	Kilogram / Piece / Liter /Ton / CT
VG_CTD3	Volume of consumer goods & services consumed by cruise travellers in CTD Type III (incoming ports)	Kilogram / Piece / Liter /Ton / CT
VG_CR	Volume of consumer goods & services consumed by crew members in CTD	Kilogram / Piece / Liter /Ton / CT
VG_B_CS	Volume of consumer goods & services consumed by cruise travellers onboard cruise ship	Kilogram / Piece / Liter /Ton / CT
T_CT_CTD1_BC	Average stay of CT in CTD Type I before a cruise voyage	Days or Hours

T_CT_CTD1_AC	Average stay of CT in CTD Type I after a cruise voyage	Days or Hours
T_CT_CTD2	Average stay of CT in CTD Type II during shore excursions	Days or Hours
T_CT_CTD3	Average stay of CT in CTD Type III during shore excursions	Days or Hours
TCT_SD_CTD	Total cruise travellers staying for a single day in CTD	Pax
TCT_MD_CTD	Total cruise travellers staying for multi days in CTD	Pax
EN_CTD	Number of entrepreneurs established to support the cruise tourism industry CTD	No of Entities / 1000 Residents
CM_CTD	Number of crew members visits to CTD	No of visits
CM_CS	Number of crew members onboard cruise ships	Thousand

<sup>(1)</sup>CTD – Cruise Tourism Destination, CT – Cruise Traveller, CS – Cruise Ship,

**Source:** Own elaboration.

It is common knowledge that the development of cruise ship market is accompanied by positive as well as negative effects. Certainly, the port authorities and local governments are mostly interested in conducting studies presenting the positive impact of the development of cruising market on the social and economic development of coastal cities and regions, and presenting these results to the public. Whereas, they are rarely interested in sharing their information on the environmental pollution from cruise ships traffic in the ports and negative effects related to mass tourism caused by the inflow of dozens of travellers to coastal destinations. While, the pro-ecological organizations are tracking closely the ship-owners' activity and monitor the pollutants emitted to the seas and oceans as well as the pollution within the ports (Friends of the Earth, 2020).

**Table 2.** *Economic indicators to assess the contribution of cruise tourism market to the local economy in CTD*

Indicator symbol	Indicator description	Measurement unit
E_CTD_BC	Average spent of CT during stay in CTD Type I before a cruise	USD
E_CTD_AC	Average spent of CT during stay in CTD Type I after a cruise	USD
CTE_CTD	Total CT expenditures during stay in CTD	USD
CME_CTD	Average crew member's expenditures in CTD	USD
TCTE_S	Total CT expenditures onboard cruise ships	USD
R_CM_CP	Total revenue from cruise market for a seaport	USD
R_CT_LB	Total revenue from taxes for local budgets in CTD	USD
R_CT_CTD	Total revenue from cruise tourism to CTD	USD
T_CME_CTD	Total crew members' expenditures in CTD II	Million
CS_CT_CDT	Consumption structure of CT in CTD	Variety of goods/services
CS_CM_CTD	Consumption structure of crew members in CTD	Variety of goods/services
CS_CT_CS	Consumption structure CT on board cruise ships	Variety of goods/services
DCIW_CTD	Annual direct cruise industry wages in CTD	Million USD
IDCIW_CTD	Annual indirect cruise industry wages in CTD	Million USD
INCIW_CTD	Annual induced cruise industry wages in CTD	Million USD
R_LB_CTD	Revenue to local budgets in CTD from tourist fees &	Million USD



	port taxes	
IN_CTD	Value of new capital investments related to cruise tourism in CTD	Million USD
CME_CTD	Total crew members' expenditures in CTD	Million USD
CLE_CTD	Total spent of cruise lines in CTD	Million USD

<sup>1)</sup>B – Before a cruise voyage, <sup>2)</sup>A – After a cruise voyage, <sup>3)</sup>C – Consumption structure, <sup>4)</sup>CS- Cruise ship, <sup>5)</sup>CT – Cruise Traveller, <sup>6)</sup>CTD - Cruise Tourist Destination, <sup>7)</sup>T - Time of stay in CTD, <sup>8)</sup>E – Expenditures, CM Crew Members, R – Revenues, IN - Investment  
**Source:** Own elaboration.

The economists and sociologists as well as marketing experts are particularly interested in detailed analysis of the structure of expenditure incurred by cruise travellers, both in the place of residence if the expenditure refers to cruise ship voyage, and expenditure in coastal destinations as well as expenditure during the voyage, on board the ship. It should be noted that every traveller plays several roles during cruise ship voyage (an excursionist, a tourist, a passenger, a resident) and depending on the role played in a particular moment the basket of purchased goods and services is completely different. The travellers' roles are determined by the functions performed by various tourist destinations, i.e. place of residence, home port (CTD Type I), port-of-call (CTD Type II) or incoming-port (CTD Type III), (Kizielewicz, 2016). In any of these tourist destinations travellers have different needs, which is reflected by their purchase. To assess the level and structure of consumption, we can apply various indicators (Table 2). It should be noted that the purchasing behaviour is affected by a number of economic, social, demographic and many other factors which shall be included in the indicator analyses.

In the research studies different mathematical formulas for calculating the total costs incurred by consumers during travels ( $ICTE_{per}$ ), staying on board of cruise ships ( $C_{CS}$ ;  $E_{CS}$ ) and visiting coastal tourist destinations ( $E_{CTD1}$ ;  $E_{CTD2}$ ;  $E_{CTD3}$ ;  $C_{CDT1}$ ;  $C_{CTD2}$ ;  $C_{CTD3}$ ) are often applied. Moreover, analyses relating to the relationship between variables e.g. travel expenditure and their demographic characteristics, econometric models shall be used (e.g.  $In(exp)$ ) (Table 3).

**Table 3.** Mathematical formulas to estimate the volume of consumers' expenditures in CTD

Name of mathematical formula	Mathematical formula	Description
$ICTE_{per}$ Integrated Cruise Travellers' Expenditures Onboard of a Ship	$ICTE_{per} = \sum_{s=1,4} CTE_s = \sum_{k_{p1}=1}^5 x_{k_{p1}} + \sum_{k_{p4}=1}^5 x_{k_{p4}}$	$ICTE_{per}$ - total expenditures of i-th person incurred on consumption on cruise ships, <i>s</i> - is the number of the phase* in which the expenditure is incurred, $CTE_s$ - is the expenditure incurred in "s" phase*, $X_{kps}$ - detailed type of consumer expenditure in subsequent phases,

		$k_{ps}$ - is the category number of expenditure in "s" phase*.
ICTE <sub>CTDI</sub> Integrated Cruise Travellers' Expenditures in CTD I	$ICTE_{CTDI} = \sum_{s=3,6} CTE_s = \sum_{k_{p3}=1}^5 x_{k_{p3}} + \sum_{k_{p6}=1}^5 x_{k_{p6}}$	ICTE <sub>CTDI</sub> - total expenditures of i-th person in CTD type I, s - is the number of the phase* in which the expenditure is incurred, CTE <sub>s</sub> - is the expenditure incurred in "s" phase*, X <sub>k<sub>ps</sub></sub> - detailed type of consumer expenditure in subsequent phases, k <sub>ps</sub> - is the category number of expenditure in "s" phase*.
ICTE <sub>CTDII</sub> Integrated Cruise Travellers' Expenditures in CTD II	$ICTE_{CTDII} = \sum_{k_{ps}=1}^5 x_{k_{ps}}$	ICTE <sub>CTDII</sub> - total expenditures of i-th person in CTD type II, s - is the number of the phase in which the expenditure is incurred, X <sub>k<sub>ps</sub></sub> - detailed type of consumer expenditure in subsequent phases, k <sub>ps</sub> - is the category number of expenditure in "s" phase*.
ICTE <sub>PR</sub> Integrated Cruise Travellers' Expenditures in the Place of Residence	$ICTE_{PR} = \sum_{s=1,8} CTE_s = \sum_{k_{p1}=1}^5 x_{k_{p1}} + \sum_{k_{p8}=1}^5 x_{k_{p8}}$	ICTE <sub>PR</sub> - total expenditures of i-th person incurred in the place of residence before and after a cruise travel, s - is the number of the phase* in which the expenditure is incurred, CTE <sub>s</sub> - is the expenditure incurred in "s" phase*, X <sub>k<sub>ps</sub></sub> - this detailed type of consumer expenditure in subsequent phases, k <sub>ps</sub> - is the category number of expenditure in "s" phase*.
In(exp) the sectional econometric models of cruise travellers' expenditures	$\ln(\exp_i) = \beta_0 + \beta_1 \text{income}_i + \beta_2 \text{age}_i + \beta_3 \text{gender}_i + \beta_4 \text{time}_i + \varepsilon_i$ $i=1, \dots, N$	N – number of respondents for whom the values of all variables included in the model were available, $\beta_0$ - parameter of absolute term, $\beta_k$ for $k=1,2,3,4$ represent the strength and direction of influence of particular (k-th) variable explaining the logarithm of expenses; $\varepsilon_i$ - random component in the model reflecting all other factors affecting the volume of expenses, and not included in the model in the form of particular variables, with typically random events.
Inverse demand function – price of the cruise travel package	$P = a - bQ$	P – price of the cruise travel package, A – is the highest willingness-to-pay of a passenger, Q – is the number of passengers.

Net benefit of a cruise port	$B = p_a Q - c_A Q + f(Q)$	<p><math>p_a</math> – is the net payment per passenger to the cruise port,  <math>c_a</math> – is the cost of a passenger in the cruise port,  <math>F(Q)</math> – is the economic effects of cruise passengers' expenditures in the port city.</p>
Profit of a cruise line	$\Pi = PQ - cQ - P_a Q + eQ + fQ$	<p><math>\Pi</math> – is a profit of a cruise line,  <math>c</math> – is an onboard cost of a passenger,  <math>e</math> – is a net profit of a cruise line as a result of providing add-on products and services,  <math>f</math> – is a subsidy a cruise line might get from ports.</p>

*\*Phase I - Expenses for preparing for travel, Phase II - Travel expenses at home ports before a cruise travel, Phase III - Reception expenses at base ports, Phase IV - Expenses when travelling on cruise ships, Phase V - Expenditure on stays in coastal tourist destinations, Phase VI - Reception expenses at the home ports after a cruise travel, Phase VII - Expenditure on return travel to the place of residence, Phase VIII - Expenses for a summary of the trip*

**Source:** Own elaboration on the base of: (Kizielewicz, 2016; Jamie et al., 2017.).

In research analyses for the econometric models or statistical and mathematic models in general the basic demographic features of the respondents are often applied, i.e.: age, gender, education, profession, stage of family development and the number of family members or even the nationality of travellers. For example the econometric model *In(exp)* can be used to answer the question, what elements influence the volume of expenditure incurred in a particular region by cruise ship travellers taking part in cruise travels. The sectional econometric models explain the diversity of the level of expenditures among the respondents.

Mathematical formula  $ICTE_{per}$  can be used to calculate the value of travellers' expenditure on goods and services not included in a cruise travel package (i.e.: food, beverages, souvenirs, entertainment, beauty cosmetics and other shoppings and also shore excursions in ports of call).

Using a formula  $ICTE_{CTD I}$  - Integrated Cruise Travellers' Expenditures in CTD I one can estimate the revenue generated directly from cruise travellers' expenditures in CTD Type I. Similar formulas can be used to estimate the amount of expenditure incurred by cruise travellers in CTD Type III (*incoming ports*). Unfortunately, the range of expenses made by cruise travellers in such tourist areas is the most modest, as travellers mostly purchase goods and services in the coastal tourist destination to which they are taken by tour operators from incoming ports.

**Table 4.** *Interdependence Indicators for assessment of the level & structure of cruise travellers' consumption in CTD*

Indicator symbol	Indicator description	Measurement unit
E_CT_G	Correlation coefficient of CT' expenditures to CT' gender	Value from the range (+1, - 1)
Q_CT_A	Correlation coefficient of CT' expenditures to CT' age	Value from the range (+1, - 1)
Q_CT_I	Correlation coefficient of CT' expenditures to CT' income	Value from the range (+1, - 1)
Q_CT_N	Correlation coefficient of CT' expenditures to CT' nationality	Value from the range (+1, - 1)
Q_CT_I	Correlation coefficient of the assessment of the quality of tourist offers by CT to CT' income	Value from the range (+1, - 1)
Q_CT_A	Correlation coefficient of the assessment of the quality of tourist offers by CT to CT' age	Value from the range (+1, - 1)
Q_CT_G	Correlation coefficient of the assessment of the quality of tourist offers by CT to CT' gender	Value from the range (+1, - 1)
Q_CT_N	Correlation coefficient of the assessment of the quality of tourist offers by CT to CT' nationality	Value from the range (+1, - 1)

*Source: Own elaboration.*

The use of correlation factors allows to determine to what extent the variables analyzed are interdependent. In consumption studies quite often researchers measure the correlation between consumer incomes (in this case cruise travellers) and demographic variables (e.g. *E\_CT\_G*; *Q\_CT\_A*; *Q\_CT\_I*; *Q\_CT\_N*). In addition, it analyses the correlation coefficient of assessment of the quality of tourist offers by cruise traveller to demographic variables (e.g. *Q\_CT\_I*; *Q\_CT\_A*; *Q\_CT\_G*; *Q\_CT\_N*). If the correlation coefficient value takes  $-1$ , there is a complete negative correlation, and if the  $+1$  - complete positive correlation (Table 4).

### 3.2 Social Indicators

Qualitative indicators refer to the description of intangible assets, which is difficult to measure. In their evaluation, descriptive methods are generally used and point bonitisation methods are used to show the intensity of the phenomenon, as well as the known Scale of Likert, but also other methods describing the intensity of some phenomenon. Social indicators are defined as a kind of statistical measures that help to identify social trends and factors affecting human well-being (OECD, 1976).

**Table 5.** *Social indicators of cruise tourism development in CTD*

Indicator symbol	Indicator description	Measurement unit
S_CT_CTD	Level of satisfaction of CT from the consumption of goods & services in CTD by Likert scale	Point (1 - lowest rating to 5 – highest rating)
S_CT_CS	Level of satisfaction of CT from the consumption of goods & services during the cruise travel on aboard by Likert scale	Point (1 - lowest rating to 5 – highest rating)
S_LR_CTD	Life satisfaction of local residents in CTD from teh fact	Point (1 - lowest rating

	of cruise tourism development	to 5 – highest rating)
EM_LR_CTD	Employment rates of local residents in cruise tourism in CTD	Employees / 1000 inhabitants
/	Direct employment in cruise industry in CTD	Thousand jobs
IDE_CTD	Indirect employment in cruise industry in CTD	Thousand jobs
INE_CTD	Induced employment in cruise industry in CTD	Thousand jobs

*Source: Own elaboration.*

Using qualitative methods, one can describe the phenomenon of life satisfaction, relation to goodness or services, consumer behaviour, life expectancy, employment and unemployment rates, preferences, needs, etc. Social Indicators in research studies of cruise ship market are usually used to assess travellers' satisfaction of offers on board cruise ships and in places visited, The subject of the research studies there is also the attitude of local communities in cruise destinations to travellers and the level of employment of residents in tourism services in cruise destinations and related industries (Table 5).

### 3.3 Eco-Efficiency Indicators

For more than a decade, various reports on the economic impact of cruising market on the development of coastal regions have been available on the market. Over the last years, with regard to the fashionable Corporate Social Responsibility we observed that aspects related to the impact of cruise tourism on the social and natural environment began to appear in research reports and analyses.

In order to estimate the environmental impact to the economy, different methods and indicators are used (Table 6). In recent years, the movements of environmental organisations have intensified negative effects caused by cruise ships. The organization called *Friends of the Earth* regularly develops *Cruise Ship Report Card*, where it leads the ranking of 16 major cruise lines and 185 cruise ships using four environmental criteria: sewage treatment, air pollution reduction, water quality compliance and transparency. Thanks to their activities cruise travellers, cruise ports, local authorities of CTD have access to information on approach of individual shipowners to the ecology and environmental protection (Friends of Earth, 2020).

**Table 6.** *Eco-efficiency indicators in CTD*

Indicator symbol	Indicator description	Measurement unit
EN_SO	Emissions SO <sub>x</sub>	Kg / year
EN_NO	Emissions NO <sub>x</sub>	Kg / year
EN_PN	Emissions PN <sub>10</sub>	Kg / year
EN_PM	Emissions PM <sub>2.5</sub>	Kg / year
PAX_EMS	Passengers per Emissions	1000 PAX / Tonnes
S.C._EMS	Ship Calls per Emissions	Number / Tonnes
IN_EMS	Annual income per Emissions	Million Euro / Emissions

*Source: Own elaboration.*

Recently, the activities related to the reduction of pollutants emitted from cruise ships to the water and air have increased considerably. The situation is so serious that also IMO has become involved in order to develop restrictive laws regarding meeting the principles of sustainable development. It is worth indicating at least the MARPOL convention on the reduction of pollution from ships, as well as the so-called sulphur directive introduced by the *International Maritime Organization* (IMO) which forced ship-owners to reduce, from 1 January 2015, the sulphur emission from ships into the water from 1% to 0.1% .

$$\text{Eco – efficiency indicator} = \frac{\text{Economic aspect}}{\text{Environmental aspect}} = \frac{\text{Product or service value}}{\text{Environmental influence}} \quad (1)$$

Certainly, such solutions involve significant costs of investment for the seaport authorities and ship-owners. Both of them have to invest in proecological solutions for the environment protection. In order to assess eco-efficiency indicator, based on the ratio of economic environmental parameters as in equation 1 (Papaefthimiou *et al.* 2017; NRTEE 2001; Hupes and Masanobu 2007).

#### **4. The Case Studies – Cruise Ports Playing Various Functions**

The wide list of indicators mentioned above and the limited scope of this paper causes that to illustrate the possibilities for their use, only some of them have been selected for each type of a cruise port i.e. home port, port-of-call and incoming port. As an example of home port Port Everglades in Florida was chosen as it is the second most important cruising port in the world and cruise market studies are carried out there on a regular basis. The Bahamas Islands (Freeport and Nassau), on the other hand, were chosen as an example of ports of all, and as an incoming port – Port in Gdynia in Poland.

Port Everglades is the world's second-largest cruise port. Cruise ship revenue reached more than \$59 million in 2018, which constitutes 35,5% of the Everglades Port's revenues, and e.g. cargo revenues had a share of 20.9% in total port revenues.

**Table 7.** *The package of indicators for the CTD Type I – a case study of home port in Everglades (Florida)*

Indicator symbol	Indicator description	Measurement unit
N_CS	Number of cruise ships handled in a cruise port	858 Units
R_CM_CP	Total revenue from cruise market for a seaport	\$59,6 Million
TCT_SD_CTD	Total cruise travellers staying for a single day in CTD	0,13 Million Pax
TCT_MD_CTD	Total cruise travellers staying for multi days in CTD	3 741 408 Pax
TN_CP	Total number of passengers handled in a cruise port	3,87 Million Pax
T_CTD1	Average stay of CT in CTD Type I	4 Days
T_CTD1_BC	Average stay of CT in CTD Type I before a cruise voyage	3,4 Days
T_CTD1_AC	Average stay of CT in CTD Type I after the end of the cruise voyage	2,6 Days

E_CTD_BC	Average spent of CT during stay in CTD Type I before a cruise	\$80
E_CTD_AC	Average spent of CT during stay in CTD Type I after a cruise	\$133
DE_CTD	Direct employment in cruise industry in CTD Type I	5 821
IDE_CTD	Indirect employment in cruise industry in CTD Type I	4053
INE_CTD	Induced employment in cruise industry in CTD Type I	3 032
DCIW_CTD	Annual direct cruise industry wages in CTD Type I	\$172,8 Million
IDCIW_CTD	Annual indirect cruise industry wages in CTD Type I	\$128,9 Million
INCIW_CTD	Annual induced cruise industry wages in CTD Type I	\$296,6 Million

*Source: Own elaboration on the base of: (Commerce Report, 2019; Port Everglades, 2015).*

In 2018, Port Everglades handled a total of 858 cruise ships and nearly 4 million cruise travellers. In a directly related industry with cruise tourism more than 5,8 thousand people were employed, and in indirect – more than 4 thousand. There are two points to be distinguished, namely, cruise port revenue mainly relates to revenue generated by port fees paid by shipowners from the tonnage of a ship and the number of passengers on board and for necessary port services provided by sea port to shipowners. The Port of Everglades showed that in 2018, port revenue from cruise ship handling amounted to more than 59,5 millions US dollars. This revenue does not include travel expenses for sightseeing and other expenses made during shorex.

Thus, the revenues set out in the region for the operation of cruise travellers are not included in the revenue shown by the port authorities. It is a little different to be used to the fact that jobs in the cruise port are created, as this affects the support of CTD employment indicators. Port Everglades reports that 5,821 employees were employed in industries directly related to cruise ships, 4 053 - indirect and 3 032 - induced.

It is worth noting that in home ports, unlike other port types, travellers tend to stay much longer even up to a few days, when, meanwhile, in the port of call, this stay last usually for several hours. This, of course, affects the value and variety of travel expenses made in the CTD. In Everglades Port, cruise travellers sometimes arrive up to 4 days before the cruise, and they depart up to 4 days after the end of the flight. There are, of course, several reasons for that, from those forced by return air flights to just tourist reasons. In Everglades Port, on average, cruise travellers spend 80 US dollars before a cruise travel, and 133 US dollars - after the cruise (Table 7).

In order to calculate the total costs incurred by a cruise traveller before and after the cruise voyage in the home port  $ICTE_{CTD I}$  *Integrated Cruise Travellers' Expenditures in CTD I* was used. To use these formula we have to analyze 5 grup wydatków ponoszonych przez cruise travellers przed i po rejsie w portach bazowych (Table 8).

**Table 8.** *Cruise travellers' expenditures at home ports before and after a cruise voyage*

Number of stage	Cruise travellers' expenditures	Good & services purchased by cruise travellers	Expenditures per a Cruise Traveller / per day
Before a cruise travel	E <sub>1</sub>	Expenses for accommodation in base ports.	\$210
	E <sub>2</sub>	Purchase of food & beverages at local dining options.	\$84
	E <sub>3</sub>	Spending on purchases in local shopping centers.	\$108
	E <sub>4</sub>	Expenses for participation in local excursions, cultural & entertainment events before embarkation.	\$80 + \$106
	E <sub>5</sub>	Other expenses made to purchase goods and services at ports (local transport)	\$114 + \$34 + \$70
After a cruise travel	E <sub>1</sub>	Expenses for accommodation in base ports.	\$215
	E <sub>2</sub>	Purchase of food & beverages at local dining options.	\$91
	E <sub>3</sub>	Spending on purchases in local shopping centers.	\$125
	E <sub>4</sub>	Expenses for participation in local excursions, cultural & entertainment events before embarkation.	\$133 + \$118
	E <sub>5</sub>	Other expenses made to purchase goods and services at ports (local transport)	\$113 + \$95 + \$103

**Source:** *Own elaboration and (Port Everglades, 2015).*

Cruise travellers stay on average for three days before a cruise travel at home ports and for three days on average after a cruise travel. Given that, an average expenditure included in the Table 8 must be multiplied by 3. Using the formula  $ICTE_{CTD\ I}$  *Integrated Cruise Travellers' Expenditures in CTD I* total average costs incurred by cruise travellers (not included in a cruise travel package) was calculated.

$$ICTE_{CTD\ I} = \$2\ 418 + \$2\ 979 = \$5\ 397$$

Sometimes the expenses incurred by cruise travellers during the stay at home ports are a considerable burden on consumer budgets. Tourists while travelling very often behave irrationally and spend much more than previously planned.

The Bahamas islands were chosen as an example of a port-of-call. The Bahamas are very popular and famous cruise destination among cruise travellers. The Bahamas lies on 700 islands and over 2,000 rocks and cays. This archipelago is considered as an ecological oasis in the Atlantic Ocean, The Bahamas were visited by 3 million cruise passengers during the season 2017/2018 due to the data coming from two main cruise ports Freeport and Nassau, but only 2,4 million of them decided to leave the cruise ships to go on shore excursions. The total revenues generated from cruise ship market (i.e. expenditures by passengers, crew and cruise lines) generated a total of 406 million US dollars.

On average cruise travellers spent \$131.95 while onshore expenditures: and they mostly spent money on: shore excursions, watches and jewelry, clothing and food and beverages. Crew members are also an important group of consumers, which also leaves a large amount in cruise destinations. Onboard of cruise shipshandled in the Bahamas 1,8 million crew members arrived but only 0,5 million of them decided to



visit the destination. Crew members spent on average 54,90 US dollars mostly for food and beverages. The analyses of data also showed that directly in cruise ship tourism 5 256 residents in Bahamas were employed.

**Table 9.** The package of indicators for the CTD Type II – a case study of a port of call in Bahamas during the 2017/2018 cruise year

Indicator symbol	Indicator description	Measurement unit
T_CT_CTD2	Average stay of CT in CTD Type II during shore excursions	4,3 hours
CP_CS	Number of cruise travellers onboard cruise ships	3 million Pax
CP_CTD	Number of cruise travellers in CTD Type II per a year	2,4 million Pax
CM_CS	Number of crew members onboard cruise ships	1,8 million
CM_CTD	Number of crew members in CTD Type II	0,5 million
CME_CTD	Average crew member spent in CTD II	\$54.90
T_CME_CTD	Total crew members' expenditures in CTD II	\$28.9 million
ICTE <sub>CTD II</sub>	Total cruise passenger expenditure in CTD Type II	\$322,5 million
CTE_CTD	Total CT expenditures in CTD Type II	\$131.95
CLE_CTD	Total spend of cruise lines in CTD Type II	\$54.2 million
T_CM_V	Total crew members visits to CTD Type II	527,208 visits
DE_CTD	Direct employment in cruise industry in CTD Type II	5,256 residents
CIW_CTD	Annual cruise industry wages in CTD Type II	\$91.3 million
IDCIW_CTD	Wages for related employess indirect jobs in CTD Type II	\$155.7 million
R_CT_CTD	Total revenues from cruise tourism market in CTD	\$406 million

The 2017/2018 cruise year includes the 12 months beginning in May, 2017 and ending in April, 2018.

*Source:* Own elaboration on the base of FCCA (2018).

The situation is very different in the case of CTD Type III, where incoming ports are located. In those kinds of sea ports the revenues generated from the cruise ship market are limited to two main sources, i.e., revenues generated from port charges paid by cruise shipowners and the revenues of touroperators involved in the service of cruise travellers, while they have thier seats in the CTD. Unfortunately, quite often these are entities that run business outside of the CTD and employ tour guides also from outside the region. Research studies on economic contribution of cruise ship market for development of CTD Type III is rather difficult. Cruise travellers leave the seaport and the port city and they are taken to other tourist attractions in the region. However, a specific package of indicators can also be used to determine the economic effects for this type of CTD Type III, such as *T\_CTD*, *TN\_P*, *CTE\_CTD*, *CLE\_CTD* (Table 10).

**Table 10.** The package of indicators for the CTD Type III – a case study of incoming port in Gdynia (Poland)

Indicator symbol	Indicator description	Measurement unit
N_CS	Number of cruise ships handled in a cruise port	50 units
TN_P	Total number of passengers handled in a cruise port	0,1 million Pax
T_CTD	Average stay of CT in CTD Type III during shore excursions	8 hours

CTE_CTD	Total CT expenditures in CTD Type III	\$87.54
CLE_CTD	Total spent of cruise lines in CTD Type III	\$8,7 million

*Source:* Own elaboration on the base of: own study (Kizielewicz, 2016; PGA S.A., 2018); 8 million EUR = \$8 754 400, 80 EUR = \$87.54, Converter (EUR/USD) amounts to = 1.0943, on line: kalkulator-walutowy.mybank.pl/

The City of Gdynia is a young and modern port city located in the North of Poland. It is a financial and business centre of northern Poland. There is an excellent port infrastructure to support the largest cruise ships in the world, but the neighborhood of the 1000-year-old City of Gdansk – the capital of Solidarity and the world capital of amber and other unique tourist attractions in the region, e.g., the medieval Teutonic Castle in Malbork, cause the whole stream of cruise travellers to go to visit other tourist attractions in the region. Thus the City of Gdynia plays the role of a "parking port" for cruise ships. Gdynia port authorities receive revenues mostly from passengers', parking and tonnage charges and the local authorities of the City of Gdynia does not see the economic benefits generated from this market.

The analysis showed that in 2018 the Gdynia sea port was visited by 50 cruise ships, bringing 100,000 cruise travelers (*TN\_CP*). On average, the cruise traveller stayed in the port of Gdynia about 8 hours (*T\_CTD*) and spent 87,54 US dollars (*E\_CTD*) in the region, resulting in a total revenue of about 8,75 million US dollars (*TE\_CS\_CTD*) (Table 10).

Comparing annual revenue of the port of call (CTD Type II) in Bahamas with revenues in the incoming port in Gdynia (CTD Type III) one can see that in Bahamas revenues were almost 32 times higher than in Gdynia and 24 times more travellers were served there, and cruise travellers left there on average more by almost 34% of the funds than in Gdynia. These facts proved that economic benefits are much more higher in ports-of-call than in incoming cruise ports. On the other hand, home ports are usually the staging points of cruise ships and the seats of cruise shipowners. These places are also reception places for masses of travellers who start and end cruise travels. These facts make home ports in a much more favourable economic situation. The results of study showed, that vast majority of travellers before and after cruise travels decide to stay in ports and take advantage of available facilities, what, of course, has a positive impact on economic performance. Tourists extending their stay in home ports take advantage of hotel services, catering, entertainment, transport and commercial services. A few days stay of cruise travellers at home ports generates a lot of revenue for the local tourism industry in cruise destinations.

## 5. Discussion

The beneficiaries of studies related to the impact of cruising market on the social and economic development of coastal regions include the following entities, territorial authorities, shipping agencies, cruise port authorities, cruise shipowners, ecological organizations, cruise organizations, suppliers of goods and services and also tour-

operators. Each entity is interested in the results of analyses concerning other indicators. The review of the available and applied indicators used to assess the impact of cruise tourism market on the social and economic development and on the environment revealed that the analysts had at their disposal a wide range of quantitative and qualitative indicators. However, it should be noted that various interest groups reach for various sets of indicators depending on their needs (Figure 1).

**Figure 1.** Sets of indicators dedicated to specific entities operating on cruise shipping market



*Source: Own elaboration.*

The authorities of port cities are interested in assessing the impact of cruising market development on the social and economic development of cities and regions, including providing new workplaces, tax revenue to the municipal budget from entrepreneurs running business activity for the cruising market, as well as in

assessing the impact of cruise tourism on the natural environment and local communities. Therefore, the authorities of coastal cities look for indicators which allow to assess the social, economic and environmental impact of cruise tourism on the development of CTD.

Meanwhile, the authorities of cruise seaports benefit mainly from cruise ship service charges and passenger service fees in the ports. At home ports additional income for the port is generated from the terminal services. Therefore, the ports are mainly interested in indicators related to cruise ship traffic, flow of passengers and generated income, but also these related to the assessment of water and air pollution caused by ships within their area.

Whereas, quite different scope of indicators remains within the area of interest of goods and service providers operating in CTD. They, on the other hand, are interested in information on the average expenditure of cruise travellers in CTD and on the structure of this expenditure. In order to adapt the offer to potential demand, they also look for data on the number of travellers, and analyse indicators related to seasonality.

An entirely different set of indicators is crucial for cruise ship-owners. Their prior importance refers to total income from the sale of tourist packages and onshore excursions, since these constitute their main source of income. Surely, they make use of indicators for assessing the sales volume on board cruise ships and on their private islands. Due to social pressure and legal requirements, they keep track, particularly over the last years, of indicators related to the pollutants emitted by their ships, which indicates actions aiming at introducing modern technological solutions in this respect.

Within the seaport area there are also various organizations dealing with activities supporting the sustainable development such as e.g. *Friends of the Earth International U.S.* monitoring the level of pollution generated by the ships and analysing very closely all indicators related to the emission of „substances produced by cruisers in the form of harmful materials, vapours, liquids, particles and energy, such as: waste (communal, hazardous, floating, Persistent Organic Pollutants), gases (SO<sub>x</sub>, NO<sub>x</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, Volatile Organic Compounds, particles), nutrients, bacteria, viruses and pathogen organisms, biocides, hydrocarbons (oil and derivatives), invasive and alohtone species etc” (Rogers, McLain, and Zulo 1998). *Friends of the Earth International U.S.* publish reports indicating ship-owners and ships which emit the highest number of harmful substances. As we can see, they in turn are very interested in indicators which allow to assess the volume of pollutants to the environment, and to monitor the related effects.

In order to facilitate the use of wide spectrum of indicators, it seems justified to provide packages of indicators useful for each of the above-mentioned interest groups, which could also be preceded by studies conducted within these entities.

## 6. Conclusions

The analysis of available reports regarding cruising market studies conducted in various regions worldwide proves that the studies are performed based on various methodologies, at random, without any standardized research model, and therefore, it is difficult to conduct comparative analysis and assess the phenomena in a temporal perspective (dynamic analysis). For example, studies on the travellers' expenditure are conducted once every few years, or one time, which hinders the process of assessing changes in the consumers' purchasing behaviour and makes it difficult to assess the related impact on the social and economic development of the region. It is certain that such studies are very time-consuming and cost-intensive, and entities such as seaport authorities or local governments of coastal cities are not always able to bear the costs of regular studies. Unfortunately, this situation is not favourable to provide the accountable assessment of the development of cruising market.

- 1) Numerous institutions in the world try to assess the economic impact of the cruising market on the development of coastal cities and regions by applying various methodologies.
- 2) The traditional methodology of assessment of economic and social contribution of cruising market to the local and national economy refers to three basic measures, i.e.: direct impact, indirect impact and induced impact.
- 3) Indicators of impact assessment, as a general rule can be divided into two main groups, i.e. qualitative and quantitative. However, a distinction can also be made between economic, social, environmental, and interdependence. From a wide range of these indicators one can create packages dedicated to the individual entities involved in the cruising market.
- 4) The selection of particular group of indicators is determined by numerous factors, function of CTD on the cruising market, role of travellers in CTD, duration of traveller's stay CTD, type of package purchased from the ship owner, traveller's purchasing power, and level of economic development of CTD.
- 5) Case studies have shown that ports performing various functions on the cruise ship market they record completely different revenues, both due to their value and variety. The most economic benefits are derived from home ports and ports-of-call, and the smallest in incoming ports.

In the cruising market, various entities are looking for different indicators enabling them to monitor the trends and directions of the development of the market and tailored to their business profile. It therefore seems justified to development the packages of indicators dedicated to specific groups of interest and such trial was made in this study. For example, touroperators focus on indicators regarding the number of travellers visiting CTD and the duration of their average stay. They are also interested in the demographic characteristics of travellers, because they need it to match tourist offers to consumers' preferences and needs. In addition, they are

interested in cruise travellers' average expenditures for purchasing excursions on the shore. Meanwhile, manufacturers and suppliers of consumer goods and services analyse the level and structure of consumption of cruise travellers while shore excursions to adapt to the needs reported by the market.

The indicators proposed in this study can be used in the development of research tools to assess the impact of the cruise ship market on socio-economic development of cruise tourist destinations performing different functions. In addition, the indicators presented can be used to prepare analyses dedicated to individual entities operating in the cruising market.

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