

COVID-19 Pandemic Impact on Maritime Cruise Industry

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Abstract. Over the past 15 years, sea cruising has been one of the most sought after and profitable trips in the tourism industry, but the pandemic of the new coronavirus infection COVID-19 has made a difference. This topic is relevant, as identifying the key areas for sea cruise recovery and how to implement them in the face of a new coronavirus infection is a major prospect for the development of the field. There is a need to understand how the cruise industry can avert a large-scale crisis and over what period of time this can happen. This article has identified the main reasons for the collapse of the sea cruise industry in the face of a new coronavirus infection. It also analysed statistics on passenger traffic, cash turnover and financial results of the world's five largest cruise companies, comparing their main characteristics. The article identified the main precautions that have been taken on cruise ships to prevent the spread of the new coronavirus infection COVID-19 after the reopening of cruise companies in mid-2021. The prospects for resumption of sea cruises and the negative factors that reduce their attractiveness, based on the experience of the COVID-19 pandemic, were also considered.

1 Introduction

Sea cruises became popular in the early 20th century with the influx of emigrants to America. It was very expensive, so not many people could afford it. Today, cruise ships are one of the best types of hotels on the water, equating to a seven-star hotel. After the COVID-19 pandemic was announced, the first thing tourism authorities did was to cut the staff. Carnival Cruise Line alone had laid off some 26,000 people at the start of the pandemic. The World Cruise Association CLIA said that in the UK the suspension of cruise lines resulted in the loss of 5,650 jobs. Next, the key assets of the cruise lines - the liners - needed to be resolved. It costs an average of \$1,200 million a year to build and maintain one liner, and building the ports also did not involve stopping full operations of the companies and space for all operating liners. After all, liners can't just stand in port, they need maintenance. In previous years, there was a shortage of cruise ships, with companies queuing up at shipyards to get new cruise ships, paying a lot of money in the process. With the onset of the pandemic, shipowners were forced to either park their liners or scrap them

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altogether. In order to get the cruise industry back on track, they will have to re-hire laid-off workers and build new ships or refurbish old ones.

1.1 The relevance of the study

The relevance of the study is determined by the fact that sea cruising is one of the fastest growing types of maritime transport and combines several types of tourism. Throughout the global crises, the sea cruise industry has only been gaining momentum in contrast to other tourism industries and industries, but the COVID-19 pandemic has managed to inflict colossal losses. For example, in the third quarter of 2019, cruise companies posted profits of \$30 billion. At the beginning of 2020, the biggest companies Carnival Cruise Line, Royal Caribbean International and Norwegian Cruise Line had profits of around \$50.5 million. These figures are extremely low for a business of this scale.

1.2 Literature review

A significant number of scientific papers [1-13] have been devoted to the research in the field of sea cruising. The works [1, 2, 5, 6, 11, 12, 13] provide the results of research into the impact of the COVID-19 pandemic on the functioning and development of sea cruising. Also in scientific works [3, 4, 7, 8, 9, 10] justification and analysis of development of cruise transport and the industry as a whole are carried out. The team of authors Aleksandar Radic, Michael Lück, Amr Al-Ansi, Bee-Lia Chua, Sabrina Seeler, António Raposo, Jinkyung Jenny Kim and Heesup Han have considered important issues of sanitary and epidemiological standards on board liners to ensure passenger safety. Theodore Syriopoulos, Michael Tsatsaronis, Martha Gorila focused on the financial performance of the cruise industry and its impact on future development. Also the authors Orly Carvache-Franco, Mauricio Carvache-Franco, Wilmer Carvache-Franco analyzed the popularity of cruise ship destinations during the COVID-19 pandemic among potential customers in the travel hashtags of the social network Twitter. However, the experts did not cover in their writings specific actions to restore the cruise industry, which companies should take in the first place to restore the previous turnover and to avoid more losses. These issues will be highlighted in our work.

1.3 Problem statement

As a result of the analysis of the cited and other scientific works in the field under study, it has been established that the main problem that needs to be solved as a matter of priority is the lack of a clear plan to create conditions for the full functioning of the sea-cruise sphere and the return of the "pre-cruise" industry scale. At the same time, this problem requires continuous attention, primarily in the field of further scientific research and improvement in the field of sea cruising and travel in various maritime destinations.

1.4 Aim, objectives and hypothesis of the study

The aim of the study is to identify the main directions for the recovery of the sea cruise industry and how to implement them in the face of the COVID-19 pandemic.

The hypothesis of this paper is that since the early 2000s, sea cruises have suffered such a severe economic crisis for the first time, only from around 2024 will the cruise industry begin to regain its former momentum. The easing of restrictions related to the COVID-19

pandemic will allow the liners to resume operations and, as a result, reach a passenger turnover of 29 million and revenues of \$29 billion. From the perspective of the authors of the article, the recovery of the sea cruise industry in such a time frame is only possible with the help of government support and the following measures: financial assistance to cruise companies; subsidies for employee salaries; tax holidays, incentives and deferrals; cancellation of social security deductions from employee salaries; training companies in the tourism industry on creating new products, promotion, digital technology.

The research objective and hypothesis require the following tasks:

Identification of the reasons why sea cruise tourism has suffered such a large-scale crisis;

To analyse statistics and compare the main characteristics of the largest sea cruise companies;

An analysis of the crises that the sea cruise industry has already suffered

Identification and characterisation of the measures that companies have taken to get back on track.

2 Methods

Universal research methods were used in the study. The comparison is one of these methods. This technique helped to effectively compare passenger traffic, cash turnover, profits, losses and the main characteristics of the largest tourist cruise companies, which showed how COVID-19 has actually affected the field. The main research method used was analysis. This technique analysed in detail the passenger traffic over the last 3 years and also analysed the crises that have occurred in the sea cruise sector over the whole time. Another method of research was concretisation. This method made it possible to trace the real time constraints that cruise companies apply in order to safely provide services in this field.

3 Results and discussion

The COVID-19 pandemic has become a serious threat to all tourist destinations. The authors of the research paper by Elphas Okango, Henry Mwambi believe that "COVID-19 has caused both a health and economic shock of unprecedented scale and scope. There is a heated debate on how policymakers should respond. The lockdown policy aims to slow down the spread of COVID-19 and strengthen public health. At the same time, it can slow down economic activities". [1]. The most severe disruption occurred in the cruise industry as an outbreak of a new coronavirus infection on board the Diamond Princess caused major reputational damage to the entire destination. As a consequence, all the cruise companies have been forced to suspend their operations and the number of companies worldwide has dropped from 93 to 81 in 23 countries. This means that companies' stocks have been falling by the day and reached their lowest peak in March 2020. In the first nine months of the pandemic, for example, the three largest cruise lines Carnival Corporation & PLC, Royal Caribbean Group and Norwegian Cruise Line suffered losses of 65-75%. According to the Cruise Association, the cessation of cruise activity has resulted in more than \$25 billion in lost economic activity, as well as 164,000 jobs in the United States alone.

Figure 1 shows the passenger flow of sea cruises worldwide according to the world cruise association CLIA at the end of 2020 in millions.

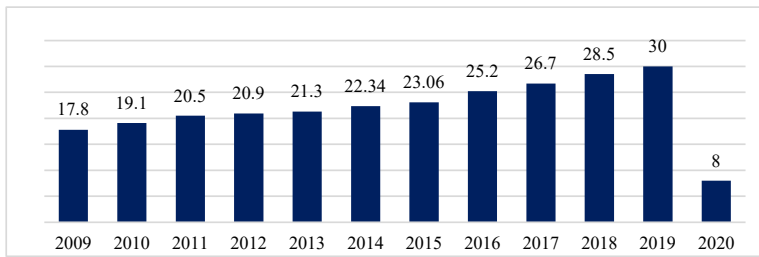


Fig. 1. Passenger traffic on sea cruises around the world according to the world cruise association CLIA at the end of 2020 in millions.

Figure 1 shows that passenger traffic on sea cruises worldwide has been increasing steadily for 10-12 years in a row. But with the declaration of a pandemic, passenger traffic has plummeted by more than half. This indicates that all travel companies have suffered a major crisis, as the companies' profits are directly dependent on passenger traffic.

It will take years for the sea cruise business to recover to the passenger flow it had in 2019. The team of authors Aleksandar Radic, Michael Lück, Amr Al-Ansi, Bee-Lia Chua, Sabrina Seeler, António Raposo, Jinkyung Jenny Kim and Heesup Han stresses that "Cruise tourism has often been celebrated as the fastest-growing segment within the global tourism industry; however, the COVID-19 outbreak in early 2020 forever changed the landscape of the cruise industry. The Cruise Lines International Association (CLIA) predicted that 32 million passengers would take a cruise in 2020, yet, due to the COVID-19 pandemic, not even 600,000 passengers completed their cruises in 2020. Furthermore, from a worldwide set of 315 ocean-going cruise ships, on 1 January 2021, only 23 were in service". [2]. It should be noted that the number of passengers in 2019 rose to 30 million, the total number of recreational passengers was 230000 and the passenger capacity of more than 350 ships was about 540000 seats, the financial gain of the industry was 30 billion dollars. And already in 2020, passenger traffic was only 8 million. It is projected that passenger numbers in 2022 will reach 22.5 million people, and the 29 million mark will not be reached by cruise tourism until 2024.

The ranking of cruise companies by passenger traffic in 2019 by percentage is shown in Figure 2.

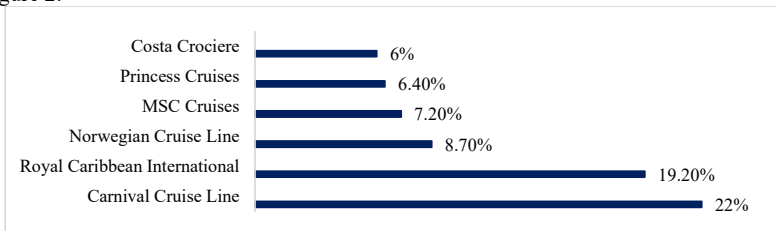


Fig. 2. Ranking of cruise companies by passenger traffic in 2019 by percentage.

Figure 2 shows that Carnival Cruise Line is the largest company in terms of passenger traffic, with 22% of passenger traffic in 2019. Not far behind is a company like Royal Caribbean International, with passenger traffic of 19.2% in 2019. The other companies are 2 or more times behind the top two. Author Alen Jugović notes that "Today, maritime passenger traffic is particularly pronounced especially in Mediterranean countries, whose expansion is caused by a constant increase in part by tourist needs, but also by the

development of an offer that adapts to the new demands of "contemporary" tourists. Therefore, tourism expansion is classified as one of the propulsive growth factors of maritime passenger traffic and as such is considered to be the drivetrain of development of seaports and surroundings that form the basis for maritime passenger activity". [3]. On this basis, it can be concluded that the direct impact on maritime passenger tourism is reflected in the income of the port or transport companies; income directly received by tourists or travellers; income from fees charged by ports for providing services to ships; income from concessions for the economic use of port areas.

The authors of the scientific paper Srec'ko Krile, Nikolai Maiorov and Vladimir Fetisov point out that "In the context of the restoration of passenger traffic after the negative impact of COVID-19 on this industry, there will be changes both in the route network and in the processes of passenger service" [4]. It follows that the company which is the first to adapt to the new conditions will be able to change its position in the world ranking of cruise companies by passenger turnover.

Table 1 shows the characteristics of the five largest cruise companies in the world.

Table 1. Characteristics of the world's five largest cruise companies.

Cruise company name	Country and year of foundation	Number of liners and number of company employees	Class	CruiseCritic website rating	Company official website
Carnival Cruise Line	USA 1972	24 liners 33500 employees	Standard	4.1	www.carnivalcruise.ru
Royal Caribbean International	USA 1968	24 liners 66100 employees	Standard	4.3	www.royalcaribbean.com
Norwegian Cruise Line	USA 1966	17 liners 43900 employees	Standard	4.1	www.ncl.com
Princess Cruises	USA 1965	15 liners 30000 employees	Standard	4.2	www.princess.com
MSC Cruises	Italy 1987	18 liners 15000 employees	Standard	3.9	www.msccruises.com

The first five companies shown above have a total of about 100 liners and over 180,000 employees working on the liners. Table 1 shows that Carnival Cruise Line and Royal Caribbean International have the same number of liners and these companies have almost the same website traffic rating, but the second cruise company has almost twice as many employees. Other companies Norwegian Cruise Line, Princess Cruises and MSC Cruises have fewer liners but have virtually the same ranking in terms of website traffic, number of employees, except for the last company on the list.

The authors Josep Maria Espinet Rius, Ariadna Gassiot Melian point out that "The database includes the following attributes: date of departure, cruise company, cruise ship, number of nights of the itinerary, type of cabin, CLIA zone of departure, the number of days between the date of capture and the date of departure, the antiquity of the ship, the tonnage of the ship, the ship rating and the final price paid by customers- including port taxes" [5]. From a management point of view it is clear that cruise companies will have higher costs associated with the new COVID-19 restrictions, and when they resume activity

they will not be able to use their capabilities for some time. This will affect the revenue and profit levels of the cruise companies.

Table 2 presents the data on passenger traffic, cash flow, profits and losses of the world's five largest cruise companies.

Table 2. Passenger traffic, cash flow, profits and losses of the world's five largest cruise companies.

Cruise company name	Passenger traffic %, 2019	Cash turnover %, 2019	Profit in billion dollars, 2019	Losses in billion dollars, 2021
Carnival Cruise Line	21	8.7	2.9	4.5
Royal Caribbean International	19	14.1	1.7	1.4
Norwegian Cruise Line	8.9	8.9	0.9	1.2
Princess Cruises	7.5	9	0.6	1
MSC Cruises	7	6.5	0.3	1.1

Table 2 shows that all companies in 2021 incurred losses 1.5 times or more than profits in 2019. It follows that the pandemic caused by COVID-19 has caused enormous damage to all companies in the industry. Author Daniel William Mackenzie Wright believes that "Its own success could eventually become its own demise. The COVID-19 pandemic has once again emphasised our vulnerabilities. For travel- and tourism-related industries, it has further highlighted the dependency on consumers and visitors as fundamental to the existence and operation of businesses and organisations" [6]. Therefore, increasing passenger traffic is one of the key elements for the cruise industry to recover from such a massive crisis.

The scientific paper by Mirjana Kovacic and Luis Silveira emphasizes that "Modern cruise tourism began in 1966, the year in which the Norwegian Caribbean Line became the first company to offer a year-round cruise itinerary targeting the broader market. The 1960s saw the rapid development of cruise tourism with trips to and within the Caribbean" [7]. The nature of cruise travel, based on ships and navigation, places cruise tourism in the maritime tourism category, as cruise liners are, in other words, floating hotels.

Due to the suspension of operations, cruise companies lost 85-90% of their share value on the world stock exchange in the 2 months after the pandemic was announced. It must also be said that Carnival Cruise Line has suffered a loss of \$4.5 billion in 2021, double the profit in 2020. Royal Caribbean International and Norwegian Cruise Line lost 1.4 and 1.2 billion dollars in 2021 respectively, while profits in 2020 were 1.7 and 0.9 billion dollars. Princess Cruises lost \$1 billion in 2021 and made a profit of \$0.6 billion in 2020. Also MSC Cruises lost \$1.1 billion in 2021 and profits in 2020 were only \$0.3 billion.

No crisis in the world has hit the sea cruise industry as hard as the COVID-19 pandemic. For example, the terrorist attacks in the US in 2001, the SARS epidemic in 2003 and swine flu in 2008 contributed to a decline in cruise travel of around 30% worldwide during the entire period of crisis. And a new coronavirus infection from just 2019 to 2020 has reduced cruise travel by 45%, so this crisis is unparalleled in the history of sea cruising. Not all cruise companies are able to survive such a massive crisis. For example, American cruise company Pacific Delight Tours declared bankruptcy on February 3, 2020. Genting Hong Kong negotiated with the German government for a long time but, failing to find a compromise, also declared bankruptcy. Despite this, Pullmantur Cruises found a way out in a restructuring under bankruptcy protection.

Table 3 shows the development of average prices in euros for sea cruises before and during the COVID-19 pandemic.

Table 3. Evolution of average prices in EUR for sea cruises before and during the COVID-19 pandemic.

Cruise company name	Average price in EUR for a sea cruise in 2018	Average price in EUR for a sea cruise in 2021
Carnival Cruise Line	850 €	450 €
Royal Caribbean International	890 €	500 €
Norwegian Cruise Line	750 €	650 €
MSC Cruises	700 €	550 €
Princess Cruises	650 €	500 €

Table 3 shows how the COVID-19 pandemic has affected the dynamics of average prices for sea cruises. The average cost per cruise has decreased practically 1.5-2 times in three years. This indicates a significant reduction in the profits of cruise companies. It is also worth paying attention to the fact that large cruise companies set lower prices than mid-tier companies.

Table 4 shows the measures to combat COVID-19 after the reopening of cruise companies in the summer of 2021.

Table 4. Measures to combat COVID-19 after the reopening of cruise companies in summer 2021.

Cruise company name	Date of first cruise	Measures when dealing with COVID-19
Carnival Cruise Line	3 July 2021	90% of visitors are required to be vaccinated against COVID-19 at least two weeks before departure, and must also present a vaccination document when boarding the liner. In addition, the company has allocated a small number of seats to non-vaccinated visitors (children under 12 years of age).
Royal Caribbean International	2 July 2021	95% of visitors are required to be vaccinated against COVID-19 at least two weeks before departure, except for children under 12 years of age. Payment for additional testing is at visitors' expense.
Norwegian Cruise Line	7 August 2021	All journeys are conducted exclusively with fully vaccinated visitors and crew.
MSC Cruises	2 August 2021	New journeys are carried out with both vaccinated visitors and non-vaccinated visitors. However, unvaccinated guests must be additionally tested for COVID-19 before boarding the liner.
Princess Cruises	25 July 2021	All visitors are required to be vaccinated against COVID-19 at least two weeks before departure and must also present the vaccination document when boarding the liner.

Table 4 shows that almost all cruise companies have resumed operations in the summer of 2021. According to experts, it will take time to get cruise tourism back on track. All travel companies have already taken a huge number of measures to combat the COVID-19

pandemic. The authors Caiyun Chen, Ping Zhu, Yongxiang Zhang, Bo Liu believe that "In the COVID-19 pandemic, the cruise ship industry has been more severely affected than many other tourism and transportation industries and is unlikely to recover due to the travel restrictions and requirements on board, such as physical distancing, which are difficult to be fulfilled" [11]. It should also be mentioned that the condition of vaccination must be fulfilled, which to some extent will prevent passengers from contracting the disease. In the first period the number of passengers should be strictly limited to avoid large crowds of people. All sanitary and epidemiological regulations must be complied with. Travel companies need to gradually emerge from this crisis, rather than aiming for a quick return of passenger traffic and company profits.

Maritime tourism in 2022 is struggling to regain its revenues, as 2020 has proved disastrous for the industry. Authors Sigamani Panneer, Komali Kantamaneni, Vigneshwaran Subbiah Akkayasamy, A. Xavier Susairaj, Prasant Kumar Panda, Sanghmitra Sheel Acharya, Louis Rice, Champika Liyanage and Robert Ramesh Babu Pushparaj observe that "Lockdown has had mixed impacts on health and the economy. Social distance is an effective way of breaking the infection cycle, and lockdown plays a vital role in that. Restrictions on movement of people and public gatherings, as well as the shutdown of economic activities, help reduce the spread of infection and restrict the number of positive cases and COVID-19 vulnerability" [12]. As a consequence, cruise companies first began to agree on new sanitary regulations for carrying passengers on board their ships. They have re-equipped their liners with new cleaning, disinfection and air systems, updated catering protocols, and introduced online platforms that are designed for online shopping and online check-in on board the ship. It is also now possible to order all sorts of services and facilities online and to navigate the liner without anyone's help. It is these measures that make it possible to organise sea cruises in 2021-2022 in a quality and safe way for passengers and employees of travel companies.

4 Conclusions

Thus, the study has identified the main directions for the recovery of the maritime cruise sector and suggested ways to implement them with a gradual recovery from such a massive crisis, without resorting to a rapid return of passenger traffic and profits of the tourist companies. Furthermore, all the objectives have been achieved, which can be confirmed by the following conclusions:

- 1) The failure of most cruise lines to prepare for the pandemic and the dependence of their profits on liner traffic have contributed to the collapse of the sea cruise industry. The number of cruise lines worldwide has fallen from 93 to 81 in 23 countries. This means that the companies' stocks have fallen by the day and reached their lowest peak in March 2020. In the first nine months of the pandemic, for example, the three largest cruise lines Carnival Corporation & PLC, Royal Caribbean Group and Norwegian Cruise Line suffered losses of 65-75%. According to the Cruise Association, the cessation of cruise activity has resulted in more than \$25 billion in lost economic activity, as well as 164,000 jobs in the United States alone.

- 2) The study shows that Carnival Cruise Line, Royal Caribbean International, Norwegian Cruise Line, Princess Cruises and MSC Cruises currently lead among the world's largest cruise companies. Carnival Cruise Line is the largest company in terms of passenger traffic, with 22% of passengers in 2019. Not far behind is a company like Royal Caribbean International, with passenger traffic of 19.2% in 2019. The other companies are 2 or more times behind the top two. Cruise companies have lost 85-90% of their share value

on the world stock exchange in the 2 months since the pandemic was announced, due to the suspension of operations. It must also be said that Carnival Cruise Line has suffered losses equal to \$4.5 billion in 2021, double the profits in 2020. Royal Caribbean International and Norwegian Cruise Line lost 1.4 and 1.2 billion dollars in 2021 respectively, while profits in 2020 were 1.7 and 0.9 billion dollars. Princess Cruises lost \$1 billion in 2021 and made a profit of \$0.6 billion in 2020. Also MSC Cruises lost \$1.1 billion in 2021 and profits in 2020 were only \$0.3 billion.

3) No crisis in the world has hit the sea cruise industry as hard as the COVID-19 pandemic. For example, the terrorist attacks in the United States in 2001, the SARS epidemic in 2003 and swine flu in 2008 contributed to a decline in cruise travel of around 30% worldwide during the entire period of crisis. And a new coronavirus infection from just 2019 to 2020 has reduced cruise travel by 45%, so this crisis is unparalleled in the history of sea cruising. Not all cruise companies are able to survive such a massive crisis. For example, American cruise company Pacific Delight Tours declared bankruptcy on February 3, 2020. Genting Hong Kong negotiated with the German government for a long time but, failing to find a compromise, also declared bankruptcy. Despite this, cruise company Pullmantur Cruises found a way out in a restructuring under bankruptcy protection proceedings.

4) The basic measures to prevent the spread of COVID-19, which have been taken on board the major cruise lines, are: compulsory vaccination of almost 90% of tourists, a limited number of passengers on the liners, also compliance with all sanitary and epidemiological regulations. It will take years to restore sea cruise operations to reach the 30 million passenger traffic it had in 2019. In 2019, the total number of crew providing leisure passengers was 230000 and the passenger capacity of more than 350 ships was approximately 540000 seats, with a financial return to the industry of \$30 billion. And already in 2020, passenger traffic was only 8 million. Cruise tourism is not expected to reach 29 million passengers until 2024. From the perspective of the authors of the article, the recovery of the sea cruise industry in such a time frame is only possible with government support and the following measures: financial assistance to cruise companies; subsidies for employee salaries; tax holidays, incentives and deferrals; abolition of social security deductions from employee salaries; training companies in the tourism industry in creating new products, promotion, digital technology.

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