


## Article

# Fundamental Shifts of Cruise Shipping in the Post-COVID-19 Era

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**Abstract:** The COVID-19 pandemic has seriously influenced cruise tourism and global businesses, which is a new variant that poses unpredictable issues for the cruise industry. This study investigates fundamental shifts in cruise shipping after the pandemic using the CRUISE PORT framework by conducting 18 semi-structured and in-depth interviews. The results show that port connectivity is the most significant factor in promoting ports as hubs. Regional competitiveness is important to sustain the cruise industry. Some ports face a low utilization rate due to cruise lines changing their itineraries and visiting low-risk ports. Cruise ports can rebuild competitiveness by improving their infrastructures. Security became the prime concern, while environmental management is not the main priority and the deciding factor in reviving the industry. A port of call is a significant factor in fostering the industry's development. The pandemic does not generate any significant issues for cruise lines in terms of ocean conditions. Recreational activities can help cruise lines to attract more passengers, and cruise traffic is a driving force to improve port competitiveness. The findings are drawn implications for the cruise sector, port authorities, and stakeholders to improve their operations and services.



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**Keywords:** coronavirus; cruise tourism; adaptation strategies; resilience actions; cruise shipping

## 1. Introduction

Cruise shipping is one of the preferred modes of leisure travel worldwide. Cruise ships are passenger ships employed primarily for vacationing [1]. A cruise is described as any fare-paying voyage for leisure onboard a vessel whose primary purpose is the accommodation of guests and not freight normally to visit a variety of destinations rather than to operate on a set route [2]. Tourists participate in cruise tours, called shore excursions, to look for relaxation, pleasure, and interest [3]. Cruise lines operate large vessels as floating hotels, which select specific cruise ports to bring passengers fantastic in-port experiences [4].

The key role of cruise shipping has significantly shifted from a way of transportation to a holiday experience. Since the 1960s, cruise shipping has evolved from a luxury activity to affordable exhaustive products that can be tailor-made to local tastes. The average price per day for a cruise product has reduced significantly [5,6]. In the 1970s, technological advancements and breakthroughs in cruise ship design and entertainment facilities led to cruise products evolving from a niche elite to a mass market [5]. Designing cruise ships has been improved from classic to modern ships and further to third-generation ships [6]. As such, the cruise industry has a large service capacity and a dynamic area that is a vital part of the global tourism industry. This leads to the industry being the fastest-growing, and most dynamic and profitable sector of the global tourism and hospitality industries [7].

Many factors make the cruise business successful, such as allocating crucial local resources for the development of shore excursion products, enlarging the available number of tourist attractions, improving cruise terminal services and customs clearance efficiency,

conducting the behavioural analysis of cruise passengers and potential cruise passengers, diversifying cruise route design, reinforcing preventative safety measures, and offering various fare structures to different types of cruise passengers [2,5,8].

The cruise industry has achieved a 2600 per cent growth since 1970. According to the Cruise Lines International Association (CLIA), global passengers increased from 17.8 million in 2009 to 30 million in 2019. The industry contributed 1.17 million jobs and an economic output of USD 150 billion. Over 80% of passengers tended to rebook cruise trips as their upcoming vacations. Cruise lines continually deployed their ships and bought new ships to fulfill the growth in demand for cruise shipping. A total of 272 cruise ships have been deployed, and 18 cruise ships were scheduled to debut in 2019 [9]. Cruising in Asia has undergone rapid growth since 2000. Various repeated cruisers are exploring desirable destinations, new markets, amazing experiences, and distinctive cultures [6]. Cruise lines increased their service capacity by 58%, leading to the number of passengers increasing by 123% over the past 10 years [10]. These reflect the continuous sustainability of demand for cruise shipping. Since the end of 2019, the cruise sector has been hit by the COVID-19 pandemic, creating crucial health challenges for cruise shipping operations. Cruise tourism dealt with exceptional failures because of social distancing, travel restrictions, and complex anti-epidemic measures. Hence, the cruise industry failed to maintain the mobility patterns of tourists during the pandemic. A series of cases of COVID-19 onboard and ineffective vaccination campaigns have adversely impacted cruisers' confidence in joining cruise trips [3]. In the first quarter of 2020, 54 infected vessels with 2592 confirmed cases and 65 associated deaths onboard [11] were reported. Thus, most cruise ports were only used for ships quarantined. Ships were also suspended for servicing. From early July to mid of December 2020, cruise lines resumed their services with about 200 itineraries [9].

Although other transportation industries have resumed their business, some cruise line services remain suspended. This is because the prerequisites for cruise lines for returning to business are more stringent. Another reason is that other transport modes support people to commute and provide livelihood necessities but cruise shipping just fulfils vacation and leisure purposes [11]. However, the cruise industry contributes various employment opportunities and substantial revenues from passengers, crew members, and supporting industries [6]. Some cities or small island countries are 'cruise-driven' and heavily rely on cruise industry development. They are striving to implement adaptation strategies and take resilience actions for sustaining the industry. Otherwise, they may face lasting effects on the economy of their countries, or bankruptcy, especially post-COVID-19 pandemic [12]. Hence, a study on the development of fundamental shifts in cruise shipping is needed, which leads to the sector having sustainability.

Previous studies on cruise shipping in Asia focus on an early development phase, emphasizing the influence of the pandemic concerning crew mental health, geopolitics, cruise ship operation and management, marine traffic, public health, environmental sustainability, and economic revitalization [13–17] using descriptive, econometric, and operational modelling. Limited research considers cruise port operators (supply side) and cruise passengers' behaviour (demand side) affected by the pandemic. In addition, there is a lack of research studies on changing cruise shipping operations after the pandemic. To fill these gaps, the present study aims to analyze the fundamental ships of cruise shipping operations and services in the post-pandemic era using the CRUISE PORT framework.

This study is divided into five sections. Section 1 presents the key research background and objectives. Section 2 explains an overview of the cruise industry and the effect of the COVID-19 pandemic on cruise shipping and the CRUISE PORT framework. Section 3 presents the research methodology of the study. Section 4 provides the main findings, while Section 5 presents the conclusion, implications, and directions for future research.

## 2. Literature Review

### 2.1. Effect of the COVID-19 Pandemic on Cruise Shipping

The COVID-19 pandemic has created crucial health challenges in different parts of the world, which has been identified as one of the most highly contagious outbreaks in recent human history [18]. On 15 January 2022, there were 318,648,834 confirmed cases and 5,518,343 associated deaths [19]. A continuous change of new variants of COVID-19 (e.g., delta, omicron, deltacron) has led to a pandemic situation that remains unpredictable and volatile. Thus, most governments implemented compulsory ‘lockdown’ policies immediately in response to COVID-19 transmission. The effects of the ‘lockdown’ policy completely diminished social mobility and created a new economic shock covering all sectors and industries.

In July 2020, cruise lines resumed their services [9]. There were around 5.8 million and 13.9 million global cruise passengers in 2020 and 2021, respectively [20]. Among these, 1.35 million passengers are from Europe, 0.66 million are from Asia, and around 3 million are from North America. The number of passengers from Hong Kong taking a cruise vacation significantly increased from 27,000 in 2012 to 250,000 in 2018. Because of the pandemic, the volume of passengers dramatically dropped from 191,000 in 2019 to 36,000 in 2020. Hong Kong only contributed to approximately 7.3 per cent of the Asian cruise market [20]. A total of 74% of passengers might take a cruise trip in the next few years, in which two out of three passengers are willing to cruise within one year. Ito et al. (2020) [12] indicated that the cruise industry has been ongoing to create more demand in substantial part because of the successful marketing strategies created by cruise lines. The cruise industry performs in a ‘supply push mechanism’ as cruise lines strive toward creating demand for cruises by offering new products with a more and larger diversified range of ships. The industry will improve again with a new supply-driven strategy even if it is affected by the pandemic.

Social distancing and isolation are vital factors for minimizing the spread of COVID-19. Cruise passengers are regarded as carriers of the virus, as well as the victims of COVID-19 virus disease outbreaks, on different occasions [21]. Cruise ships are seen to be the flashpoint for transmitting the virus due to passengers being in close areas onboard [22]. According to Moriarty et al. [23], cruise ships are often settings for outbreaks of infectious diseases due to their closed environment, contact between passengers from many countries, and crew transfers between ships. Cruise ship design falls into a pitfall because air circulation in cruise ships is not from outdoor and clean air. Corridors are not open, and some cabins are without windows. As a result, the ships have an ideal environment for spreading viruses. Cruise ships are isolated communities with specific characteristics and restricted settings, for example, common hygienic facilities, shared water and food supplies, full and closed public rooms and living apartments, and a high population density from different geographic regions. COVID-19 is more freely and quickly spread aboard through different approaches, such as food, infected persons, surfaces, and contaminated water [24]. Thus, cruise shipping is one of the most vulnerable sectors to the COVID-19 health crisis in the hospitality industry.

Cruise ships deliver enjoyment. Since the COVID-19 pandemic, numerous passengers have presented viral symptoms or positive test results. Various death cases have also been declared. As such, cruise passengers perceived considerable anxiety about taking cruise trips [22]. The Japanese Health Ministry affirmed that over 60 cruise passengers onboard the Diamond Princess had tested positive [24]. Rocklöv et al. [13] (p. 6) indicated that ‘the cruise ship conditions amplified an already highly transmissible disease’. In practice, all the cruise lines have no experience in exploring the characteristics of the new virus and have difficulties in exploring large populations. Accordingly, at least 25 cruise ships were investigated regarding confirmed cases onboard [24].

The COVID-19 pandemic is a continuing global crisis and thus, cruise shipping in Hong Kong could not escape reality. Hong Kong tourists will likely remember the mass media and social media perception of passengers quarantined for weeks, trapped on ships

rejected from various ports of call and barred from disembarking. These interpretations could affect their awareness of cruises' health risks. As expected, they may change their future travel options [14,15]. The decrease in the number of cruise ship arrivals is due to the decline of cruise tourism restricted by COVID-19 since 2020. Tourism from Mainland China has also declined in many ports.

Previously, the cruise market was the largest source of future growth in initially attracting more cruise ship calls. However, the pandemic has deterred oversea tourists and has had a major negative impact. Cruise ports have also restricted the number of gambling cruises, in an attempt to promote the attractiveness of multi-day recreational cruises. Although a port may be sizeable, the availability of good airport links and high-volume capacity at the currently restricted airports are a barrier to a significant volume of cruise embarkations [16]. As a direct result, the total arrivals of cruise ships in Hong Kong decreased from 2839 in 2013 to 130 in 2020, as shown in Table 1.

**Table 1.** Ocean cruise ship arrivals at Hong Kong port.

Year	Ship Arrivals	Year	Ship Arrivals
2009	2476	2015	2258
2010	2305	2016	1773
2011	2366	2017	1532
2012	2417	2018	1378
2013	2839	2019	981
2014	2774	2020	130

Source: Hong Kong Maritime and Port Board [17].

Apart from the COVID-19 pandemic, political uncertainty and tourists' perception of civil violations in Hong Kong continue to represent serious restrictions to the growth of oversea international passengers. As such, a possible barrier against future recovery are the political relations among individual countries. With attractive cruise itineraries in the region, invariably involving port calls in different countries, common visa arrangements in the region may also restrict passenger movements. Although these are indicators that cruise operations are becoming difficult.

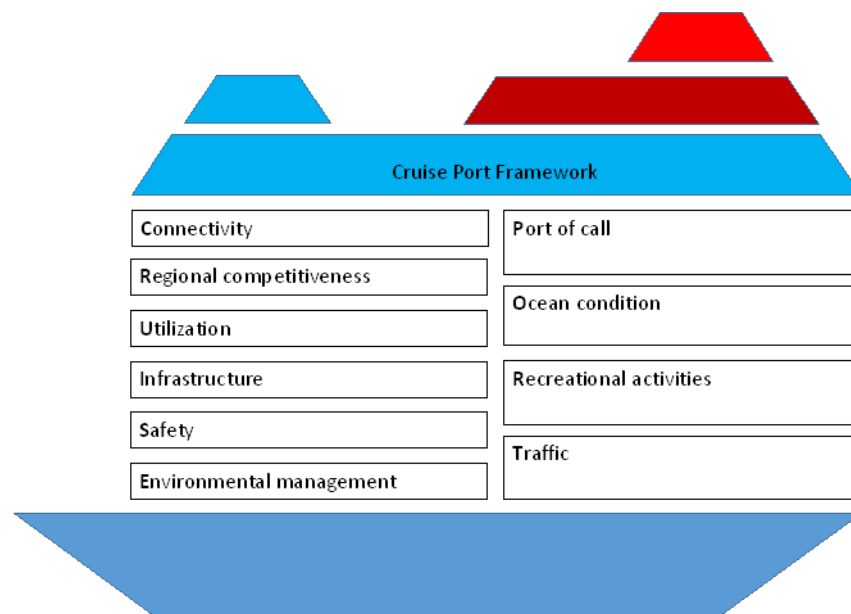
Some studies are relevant to the cruise industry in the pandemic context. Ito et al. [12] and Chen et al. [25] used Automatic Identification System (AIS) data to investigate the impacts of the pandemic on cruise shipping activities. Radic et al. [26] studied the psychological impacts of the pandemic on cruise ship crew employees. Brewster et al. [27] and Liu and Chang [28] focused on how the government designs and implements response plans for cruise ship incidents using a case study approach. Muritala et al. [29] used social media conversations to explore the public perception towards cruising. To a certain extent, the previous studies performed lacked a holistic approach to analyze the fundamental shifts of cruise shipping during the pandemic using the robust cruise port framework.

## 2.2. CRUISE PORT Framework

The CRUISE PORT Framework was first formulated by Lau and Yip [6]. Sustained prosperity is achieved without a nation that becomes innovation-driven, strong diamonds are not in place in the home bases of many internationally successful industries and inward foreign direct investment does not indicate a lack of competitiveness or low national productivity [30]. Based on the established Porter diamond framework, the CRUISE PORT framework was then proposed. The framework is separated into two key parts. The first part is CRUISE which analyses the passengers' views. The second part is PORT which analyses the ships' views. Cruisers' experiences are urgently needed in tourism studies, and previous studies on cruise passengers' behaviours were seriously ignored [31,32].

The CRUISE PORT framework was used in the study of Lau and Yip [6]. The creation of the framework was supported by the existing literature and various industrial practitioners' valuable feedback and professional advice. A systematic framework was built to identify key developments in the cruise industry rather than merely reviewing what is

achieved in the existing literature. The framework comprises 10 important components: connectivity (C), regional competitiveness (R), utilization (U), infrastructure (I), security (S), environmental management (E), ports of call (P), ocean condition (C), recreational activities (R), and traffic (T), as shown in Figure 1.



**Figure 1.** CRUISE PORT framework.

There is only one study that uses the CRUISE PORT framework. Lau and Yip [6], who first proposed the framework, studied cruise shipping on the demand side and supply side. As expected, the framework gives valuable insight into how to design and implement strategies for securing potential cruise passengers and keeping loyal passengers in the post-COVID-19 pandemic.

### 3. Research Methodology

The framework is applied in this study to analyse the fundamental shifts in the cruise shipping industry in the post-pandemic. This study uses the CRUISE PORT framework to cover the demand side (i.e., cruise passengers) and supply side (i.e., cruise ship operators) of cruise shipping. Most passengers tend to destinations again as independent tourists after fantastic onshore experiences [33]. Potential cruisers aspire to visit favoured and popular places by participating in cruise tours [3]. However, the cruisers are affected by a series of onboard infection incidents that occurred during the COVID-19 pandemic.

The framework is designed for giving constructive advice and useful guidance to suggest adaptation strategies and resilience actions for sustaining the cruise industry, rebuilding tourists' confidence, keeping loyal cruisers, and rethinking the cruise sector after the pandemic. To supplement the research findings, we carried out 18 semi-structured and in-depth interviews with cruise lines, cruise terminals, travel agencies, tourism associations, logistics associations, cruisers, and airlines. The framework emphasises the key components of a cruise port system that are crucial to consolidating the position of a region as a primary regional cruise hub in the post-COVID-19 era.

In the first phase, we created a focus group with industrial experts and researchers to give constructive advice and valuable insight to recognise proper interview question design and content in April 2021. Thus, the correctness and validity of the content can be ensured. Double-barrelled and vague wordings have been removed [34,35].

In the second phase, the study carried out 18 semi-structured and thorough interviews with airlines, cruise passengers, cruise lines, researchers, tourism associations, logistics associations, travel agencies, and cruise terminals from May to July 2022. This phase



provides valuable insights and research findings to support the CRUISE PORT framework. We mainly relied on previous contacts through personal or social networks to access key informants using snowball sampling. Snowball sampling has been used in qualitative research in different disciplines. This sampling is incremental which stimulates researchers to provide the opportunity to employ new participants and improve sampling clusters when other contacts have drained [36]. Thus, we searched for key informants to introduce or refer to another suitable participant in the data collection process.

Most interviewees are situated in the Asian region. Hence, they have rich experience in the Asian cruise market. The target interviewees were expected to have at least five years of working experience in the cruise industry serving the Asian cruise market. Most interviewees hold supervisory and managerial positions, reflecting their strong ability to develop a cruise market, and design a cruise trip and itinerary. In addition, most interviewees were at the tertiary education level with a transport or tourism discipline. They have also acquired recognised professional qualifications in logistics or tourism professional associations. As such, we can ensure that these participants have expertise in the topic.

The study uses Hong Kong as the research context because it has a popular cruise port and has provided cruising services for over half a century in the Asian region. Cruise ports in Hong Kong were designed for promotion as a major international cruise centre, strongly favoured by the year-round suitable weather and its airport hub status in terms of air passenger traffic. Other ports are restricted by government regulations. However, ports in Hong Kong are mainly determined by economic factors. This provides unique settings for researchers to provide constructive advice and valuable insights into the revitalisation of worldwide cruise shipping.

Cruise passengers have repeated cruisers from Asian countries and are the most frequent visitors to the Asian ports of call. The interview findings can explore the fundamental shifts of cruise shipping in the post-COVID-19 era from Asian stakeholders' viewpoints. The profiles of the interviewees are shown in Table 2.

**Table 2.** Interviewees' profiles.

Interviewee	Nature of the Company	Position	Working Experience in the Cruise Industry
1	Travel agency	Supervisor	15 years
2	Travel agency	Managing Director	12 years
3	Travel agency	Supervisor	5 years
4	Travel agency	Supervisor	15 years
5	Travel agency	Manager	33 years
6	Logistics association	Executive Director	30 years
7	Tourism association	Sub-committee Chairman	5 years
8	Cruise terminal operator	Managing Director	20 years
9	Cruise terminal operator	Manager	20 years
10	Airline	Manager	10 years
11	Airline	General Manager	40 years
12	Cruise line	Director	20 years
13	University (Hospitality and Tourism discipline)	Lecturer	8 years
14	University (Maritime Tourism discipline)	Professor and Dean	30 years
15	N/A	Cruise passenger	N/A
16	N/A	Cruise passenger	N/A
17	N/A	Cruise passenger	N/A
18	N/A	Cruise passenger	N/A

The different main points were created by the respondents, and became familiar with their different perspectives [35]. This study uses content analysis to integrate the interview data into the CRUISE PORT framework that was well-established in the previous study. A semi-deductive approach is applied to incorporate interview data into preconceived ideas or themes. The framework is used to map connections in the interview data to those specific themes or ideas. We followed up with some rapid conversations with interviewees to clarify the main points which enabled us to illustrate the suitable interview

contents using appropriate items of the framework. Interview data were supported by the relevant literature.

#### 4. Findings

This section presents the research findings based on the 10 interview questions summarized in Table 3. To integrate the interviewees' viewpoints into the CRUISE PORT framework, the content analysis is illustrated in the 10 key elements of the framework.

**Table 3.** Interviewing questions.

S/N	Interview Questions	CRUISE PORT Framework's Elements
Q1	How can cruise travel be promoted in the future?	R, S, P, R
Q2	How can the possible massive spread of disease onboard be prevented in the future?	I, T
Q3	How can small-scale quarantine be arranged onboard in the future?	I, T
Q4	How can large-scale quarantine ashore in cruise ports be arranged in the future?	I, T
Q5	How can emergency response plans (crew members, cruise passengers) be designed and implemented in the future?	I, S, O, T
Q6	How can emerging cruising business models be created?	R, U, E, P, R, T
Q7	Which factors can contribute to making the cruise industry resilient enough to bounce back in the post-COVID-19 era?	C, R, S, E, R
Q8	In the cruise industry, which factors have been influenced the most due to COVID-19?	R, U, P, T
Q9	What are the key elements required to include in the "CRUISE PORT" framework in the new cruise shipping?	C, R, U, I, S, E, P, O, R, T
Q10	How can the cruise industry use "CRUISE PORT" framework elements as an opportunity to take a more sustainable form?	C, R, U, I, S, E, P, O, R, T

**Connectivity**—Cruise port connectivity is produced by two key factors. First is the capacity of cruise port authorities to establish close relationships with various cruise lines. Second is the geographical location of cruise ports in which they are proximate to other beautiful or influential cruise ports and easily accessible to cruise port hinterlands [37,38]. These factors are crucial for cruise ports to become hubs via improving ship traffic volume in the cruise shipping network [39]. Connectivity is one of the significant factors for cruise port selection [31,40]. Industrial practitioners, researchers, and cruise passengers expressed that connectivity is the most significant factor in strengthening a cruise port as a home port. Thus, it could revitalize cruise tourism in the post-COVID-19 era. The interviewees (travel agencies) suggested that cruise lines collaborate with free shuttle buses or coaches to provide point-to-point transport services from cruise ports to tourist attractions. The interviewees (cruise passengers) indicated ports are crucial to have easy access between port areas and shopping areas, for instance, souvenir and boutique shops.

**Regional competitiveness**—Regional competitiveness is associated with the industry competing against nearby competitors by attracting investment from private and foreign capital, supporting technological development, and creating innovation contexts through talents, professional workers, and entrepreneurs [41]. The excursions for shopping, local culture, history, and sightseeing should be well connected to the cruise ports. In addition, the establishment of the local cultural system, sustainable economic development, knowledge diffusion, and environmental resource utilization should be improved for the long-term regional competitiveness of the ports [42]. The interviewees (cruise terminal operators) reported that regional competitiveness is somewhat critical to sustaining the cruise industry after the COVID-19 pandemic. The re-establishment of port connectivity induces an uncertain level of regional competitiveness. Thus, the cruise network with a high clustering coefficient and a small average path length can improve its connectivity. This is also investigated by [43]. In addition, cruise lines should explore small private islands as exclusive destinations to provide new cruising experiences. There are various

types of onshore products and unique destinations that are crucial to attracting cruise passengers [5]. The interviewees (travel agencies) proposed that cruise lines should introduce double point offers or discount cruise packages that visit small private islands. Moreover, the interviewees (cruise terminal operators, researchers, and tourism associations) mentioned that cruise sailing may also start from inner to outer circles. That is cruise lines sail from nowhere to Greater Bay Area to Mainland China, the Southeast Asia region (i.e., low-risk areas). This is an effective way to control transmission. This also can rebuild the tourists' confidence in sailing again since tourists are still concerned about the pandemic onboard. This is also investigated by [44]. However, the interviewees (cruise terminal operators, cruise passengers, and cruise line) criticized that mass media disseminating false or misleading information leads to residents misunderstanding that cruise ships easily spread viruses or are prone to the COVID-19 outbreak. Thus, the interviewees (logistics and tourism associations) suggested that cruise lines should promote the positive image of cruise shipping via social media marketing rather than travel agencies. As suggested by [34], this approach is expected to reach the global market extensively without time and place restrictions and keep customers updated instantly.

**Utilization**—The cruise industry is characterized by the cruise traffic seasonality pattern that is determined by sub-regions or destination regions rather than cruise ports in separation [35,45]. Ports may face an under-capacity problem due to off-season months. Under-capacity induces ports to face diseconomies of scale and economic losses as regards return on capital [46]. Hence, ports collaborate with cruise lines to facilitate the latter lines calling the former repeatedly [47]. The interviewees (various professional categories) agreed that utilization is somewhat vital in encouraging cruise shipping to prepare for the aftermath of the COVID-19 pandemic. Nevertheless, the interviewees (logistics associations and cruise terminal operators) highlighted that some ports may face a low utilization rate due to cruise lines changing their itineraries to focus more on low-risk ports. During the interview process, the interviewees (cruise lines, travel agencies, airlines) explained that cruise lines would like to reduce tourists' infection risks of facing disease outbreaks. In response, they proposed cruise lines may develop a chartering service for large corporations in off-peak season. This initiative not only achieves promotional purposes but also increases tourists' confidence in cruise tourism. It may also increase port utilization in the long term [48]. However, the interviewees (cruise passengers) did not perceive the utilization as crucial to cruise tourism as it may not directly affect their cruising experience.

**Infrastructure**—Cruise lines expect ports to enlarge their capacity, redesign infrastructure, and build supporting facilities to service mega cruise ships [49]. Sophisticated infrastructure, suitable capacity, and state-of-the-art ports are also crucial for tourists' embarkation and disembarkation. Excellent ground transportation is also vital to connect with different inside port facilities [31]. Interviewees (airlines and logistics associations) indicated that infrastructure is important to rebuilding the cruise industry's competitiveness after the pandemic. A large number of cruise passengers travel in large cruise ships because of ship stability, comfortable environment, and cheaper cruise packages. Additionally, interviewees (cruise terminal operators) addressed that most cruise lines buy third-generation ships to improve their capacities and service quality. This is also in the literature [6]. Regarding infrastructure, interviewees (travel agencies, cruise terminal operators, logistics associations and tourism associations) proposed that cruise ports need to provide sufficient supporting services for agents and health departments. Ports should also construct separate aisles to foster crowd control and distinguish between tourists with infectious and non-infectious statuses. Ports may also collaborate with health departments to conduct COVID-19 simulation exercises and mock drills for emergency response for handling confirmed cases. Ports should provide support services for the pandemic, for example scanning passenger temperature, providing medical rooms, and organizing transport from and to hospitals. Interestingly, interviewees (cruise passengers and researchers) provided constructive advice about the ports that may use the robot for cleaning and answering enquiries to minimize human-to-human interactions in the future. The robot may also



perform as a tourism information desk, welcome reception, and travel centre. This is also found in the study of Satta et al. [31].

**Security**—A cruise ship will stop at various cruise ports during a voyage. To this end, the ports need to make sure that they have sufficient capacity to maintain security levels in the waiting area, customs quarantine control facilities, security checkpoints, vessel clearance, and entry and exit counters [31]. Issues of tourists' security were scarce in maritime transportation although security is a cruising hallmark [50]. An increasing vessel size leads to rising security concerns [51]. Cruise passengers are recognized as 'perfect' terrorist victims because of numerous tourists in a restricted space [52,53]. Thus, ports must collaborate with cruise lines to design and implement robust security measures in response to maritime piracy and terrorism or terrorist attacks [50,54]. Based on the interviewees' (industrial practitioners, researchers, and cruise passengers) perspective, security became the prime concern of the cruise industry in the post-pandemic. Cruise lines design itineraries that mainly consider low-risk areas. Hence, risk assessment management will be enhanced in the post-pandemic era [55]. In response, the interviewees (cruise terminal operators and tourism associations) indicated that the industry may create a COVID-19 health protocol for cruise ships, including general hygienic measures, cruise travel safety advice, vaccination requirements, COVID-19 testing requirements, medical care, and onboard health practices. Additionally, the interviewees (cruise lines) emphasized that their cruise ships convert from inside rooms to isolated rooms for crew members and passengers in case they are infected. Alternatively, cruise lines may reserve a separate zone area rather than a cross-sectional area for quarantine. At present, cruise lines only provide rooms with windows and balconies for fresh air circulation. To minimize virus transmission, the interviewees (tourism associations and travel agencies) further mentioned that cruise lines require all passengers to be vaccinated, wear an electronic wristband and undergo a rapid PCR test. All public areas and facilities (e.g., swimming pools, spas, food, and dining) are under crowd control and deep disinfection. Cruise ships also need to allocate separate medical treatment areas with professional health specialists and doctors onboard. This is also confirmed by [56–60]. In the future, the interviewees (researchers and cruise terminals) reinforced that cruise lines operating large-sized ships should maintain high-security levels because of sufficient medical facilities and cruise medical staff and large areas for managing outbreaks or confirmed cases onboard.

**Environmental management**—The main negative environmental impact created by cruise ports is air pollution, especially greenhouse gas (GHG) emissions, which generate global warming due to GHG trapping heat. This impact not only deteriorates the natural ecosystem but also affects the residents' physical condition with afflictions, such as respiratory diseases, lung cancer, and asthma. In this sense, green port development is a hot topic in port management. Green environmental management reinforces sustainable development in the cruise industry and encourages ports to decrease operational costs. A green port brings positive outcomes to the port's customer retention and economic performance [56]. The interviewees (cruise terminal operators and logistics associations) responded that port authorities may use green port management tools to enhance environmental sustainability and exhibit green management practices. The main tools include penalty pricing, incentive pricing, measuring and monitoring, and environmental standard regulation. This is also examined by Hussain and Fusté-Forné [57]. Nevertheless, the interviewees (cruise passengers and cruise lines) perceived that environmental management is not an urgent demand for boosting the recovery of cruise tourism in the post-COVID-19 era. They also expressed that environmental management is not the main priority and the deciding factor in reviving the cruise industry post-pandemic. Davis and Ellis [30] pointed out that the negative impacts of cruise tourism are seriously overlooked.

**Port of call**—A port of call describes the number of cruise ports created as a home port. A home port is a port where a cruise ship engages or changes over most of its tourists, as well as arranges stores, fuels, and supplies. A cruise ship normally stays at a port call for about 8–10 h. At a home port, passengers spend six to seven times more than

what they spend at a port-of-call [58]. A close railway connection with a home port is advantageous to tourists and the implementation of a smooth ticketing process is critical. International tourists prefer to arrive at a home port by using air transport. Therefore, the operational performance of a home port is affected by flight regularity, neighbouring airport support, and simple immigration clearance operations. As regards public transport, coaches, buses, taxis, and minibuses improve the tourists' local transit time by providing point-to-point urban service in a large-scale network. Extensive highways and tunnels minimize the extreme delay of the cruise departure and a traffic congestion risk in terrible traffic situations. The key elements of a home port are the berth allocation system, cruise ship turn-around time, baggage handling, and port dues for cruise passengers and ships. Most interviewees (the industrial practitioners, researchers, and cruise passengers) reflected that the port of call remains an important factor in fostering the development of and changes in the cruise industry after the pandemic. In the short and medium terms, the cruise ship arrivals are mainly from neighbouring cities or countries such as Taiwan, Shanghai, and Okinawa Island. Cruising to nowhere and onboard casinos will also contribute to ports of call. This is also confirmed by Bowen et al. [50]. In the long term, the number of ports of call from ocean cruise ships will increase based on the 'supply push mechanism' [12]. Based on the interview findings, cruise passengers perceived that they prefer to take cruises for long-haul travel, whereas they would take planes for short-haul travel. This demand may determine the cruise ports' strive toward attracting the leading international cruise lines to call for the ports in the future. The outbreak of COVID-19 also induced a rapid change in market environments. To attract cruise lines, the interviewees (cruise terminal operators and logistics associations) proposed ports may offer cheaper passenger fees and lower dockage tariffs. As suggested by [4], the government may permit terminal operators to have flexibility in determining charges according to changing market situations.

**Ocean condition**—The typical ocean conditions pertain to water depth, ocean circulation, tidal current, wave height, wave speed, wave direction, typhoon, water clearance, and tidal range [59]. The oceanic condition carries significance for coastal tourism and some recreational activities such as boating, surfing, scuba diving, and fishing [60]. Traffic lane width, channel length, and darkness are crucial to providing service for the number and size of cruise ships in peak seasons [61]. Cruise ships sailing around protected natural areas are challenging due to the stringent control of International Maritime Organization (IMO) member states [62]. Interviewees (cruise terminal operators and cruise lines) indicated that cruise lines planning itineraries usually consider the weather and sea conditions regardless of the pandemic. Poor weather will easily induce tremendous cruise ship accidents. Thus, most interviewees addressed that the pandemic will not generate significant issues in terms of the ocean condition.

**Recreational activities**—Cruise shipping integrates onshore recreational activities with cruising experience. Numerous recreational activities, such as theme parks, wildlife parks, shopping, sailing, recreational boating, and zip-lining, encourage cruise ships to call for desired ports [63]. Recreational activities aim to create excitement, pleasure, joy, amusement, and fun for tourists [64]. However, some recreational activities fail to fulfil the tourists' expected meaning or values [65]. Hence, accelerating the enlargement of relevant recreational infrastructures near ports is needed. The attractiveness of onshore recreational activities would remarkably affect tourists' choice of cruising. Onshore excursion managers collaborate with cruise lines to produce successful showcases of top tourist attractions, historical monuments, and landmark locations [66]. Therefore, the uniqueness of cruise shore excursions is determined by the route of cruise lines, which is focused on cruise passengers [5]. Since the lockdown policy, some ports have been closed [25]. This is suggested that cruise lines decorate their ships with specific themes and provide new, innovative onboard unique recreational activities, such as climbing and surfing for adults, and exciting entertainment for the whole family. Based on the interview process, the interviewees (travel agencies, tourism and logistics associations, and cruise passengers) suggest that cruise lines design interesting recreational activities onboard to attract passengers to cruise in

the future. They also expressed that tourists' perception of onboard activities is one of the key quality attributes of cruise lines. The interviewees (cruise passengers) highlighted that onboard activities are one of the determining factors which motivates them to consider choosing cruise lines.

**Traffic**—Global cruise ports are expected to increase their traffic volume. Ports near heavily populated areas and beautiful hinterland destinations with sufficient furnished ships and distinct tourism resources are more promising to attract tourists and cruise ships [64]. Temporal and spatial cruise traffic is influenced by the tourist demand and the current state of the economy in a region or country [25]. Increasing traffic speed, traffic flow, and traffic density may induce a high possibility of ship accidents [61]. As such, cruise ship safety management is important for cruise lines to ensure the safety of the marine environment and ships [65]. Most interviewees (cruise lines, cruise terminal operators, logistics associations, airlines, tourism associations, and researchers) perceived that cruise traffic will be the driver of cruise port competitiveness in the future. They reflected that traffic is an important factor of the CRUISE PORT framework. Importantly, the interviewees (cruise terminal operators and cruise lines) mentioned that the government restricts ship operation to a maximum passenger capacity of 50% due to robust social distancing measures. The interviewees (cruise lines) pointed out that they plan to operate small- and medium-sized ships in response to fit luxury or niche market strategies in the future and achieve economies of scale. This is also confirmed by [12,67]. As expected, the number of cruise ship arrivals will be more frequent than before. The interviewees (cruise terminal operators and cruise passengers) emphasized that ports need to maintain a smooth flow of passengers during embarkation and disembarkation. Otherwise, a large group of tourists will be congested in the same area.

## 5. Conclusions

COVID-19 is a new virus that has changed the landscape of the cruise industry. A wave of confirmed cases has been identified in cruise ships, significantly reducing the motivation for cruise passengers to engage in a cruise trip. This study uses the CRUISE PORT framework to investigate the fundamental shifts in cruise shipping in the post-pandemic Era. The results show that passengers tend to change their cruise shipping options according to the pandemic. This leads to generating turbulent and uncertain environments for cruise shipping as well as new demand. Thus, future cruise travel should be innovative and safe.

After the pandemic, the interviewees believe that port connectivity is the most crucial factor that promotes a port as a hub of cruise shipping. The cruise industry can sustain its operation by improving regional competitiveness. Port utilization is the key factor for cruise lines to design itineraries, especially ports with low risk. The infrastructure of a port is important for rebuilding port competitiveness. Security is the prime concern, while environmental management is not the priority factor in reviving the industry. A port of call is an important factor in fostering industry development. The ocean condition is an important factor that cruise lines consider when planning their itineraries. Cruise lines can attract more passengers by designing interesting recreational activities. Cruise shipping traffic affects the competitive level of a port.

The findings are useful for the cruise sector. Ports may provide point-to-point transport services between tourist destinations. Cruise lines should service itineraries with discounted cruise packages that visit a few ports or small islands that have a low infection risk. Ports should increase their utilization by attracting more cruise ships and passengers to visit them in the off-peak season by offering promotions, such as free cost for cruise ship berthing, and a low price for chartering service. In addition, ports may improve their infrastructure to build passengers' confidence by providing sufficient supporting medical services, constructing separate aisles between infectious and non-infectious passengers or even using the robot for cleaning and answering enquiries. As security is a key concern, ports and the sector must design and implement robust security measures. Ports of call

may offer a cheaper fee to attract more passengers. The government should permit the sector to have flexibility in determining charges according to changing market situations.

The current study is subject to some limitations. First, this study used a qualitative approach to discuss the research findings but did not use the quantitative method to give an insightful analysis. Future research should use both qualitative and quantitative methods to get strong and comprehensive findings. Second, the study considered only the Asian regions, notably Hong Kong, to imply the shifts of cruise shipping as a whole world. Future research should consider other regions such as North America and Europe to reveal comparative results, which can increase the generalization of the study. Third, this study did not consider other factors that affect the shifts, such as demand, policy, and cruise price. These should be considered in future research.

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