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A STUDY OF CRUISE SHIP SAFETY MANAGEMENT SYSTEM IN CHINA

A dissertation submitted to the World Maritime University in partial fulfilment
of the requirements for the award of the degree of Master of Science in Maritime
Affairs
2023

DECLARATION

I certify that all the material in this dissertation that is not my own work has been identified, and that no material is included for which a degree has previously been conferred on me.

The contents of this dissertation reflect my own personal views, and are not necessarily endorsed by the University.

(Signature): ...LIU FEI

(Date): ...28 June 2023

Supervised by: ...ZHANG, RENPING

Supervisor's affiliation: ...Dalian Maritime University

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I would like to use this opportunity to extend my most sincere gratitude to Professor Zhang Ren Ping. His boundless tolerance and feedback, his meticulous academic approach, his forward-thinking attitude toward the scientific community, and his persistent work ethic have profoundly inspired and motivated me.

The MSEM is a prestigious master's degree program that educated me in a methodical manner on the International marine Organization and marine laws, regulations, the physiology, and history that lies behind them, as well as future orientations and a great deal more. It allowed me to identify theoretical justification and analogous situations for many challenges I faced in my profession, and to develop a broad picture for my career.

I would also want to express my appreciation to my classmates, in particular the members of my cohort, for the editing assistance, late-night feedback sessions, and moral support they provided. In addition, I'd want to express my gratitude to Professor Zhao Jian, Miss Zhao Lu, and the other instructors whose teachings have influenced and inspired me.

Last but not least, I would be negligent if I did not include my family, most notably my mother and father, my wife, and my children. They have been supportive and helpful to me during this time of my studies, and their belief in me has helped me to maintain a positive attitude and maintain my motivation throughout this process.

Abstract

Title of Dissertation: **A study of cruise ship safety management system in China**

Degree: **Master of Science**

Since 2006, China's cruise sector has grown 40% each year due to rapid economic growth and rising living standards. This rise is due to significant living standard improvement. China's cruise industry has begun a prosperous market growth. Since the COVID-19 pandemic began in January 2020, the cruise industry has been on hold, but some domestic cruise companies have cooperated with international cruise lines to build up the China cruise company, some of which have registered ships in China to boost China's cruising market. Since China changed its COVID-19 policy, the cruises market is expected to rebound. Despite its many hurdles, the China Cruise Company must address the safety management system aboard Chinese-flagged cruise ships.

The Cruise Ship Safety Management System (SMS) ensures ship and passenger safety by providing rules, procedures, and standards for shipboard and shoreside operations. SMS has clear guidance from international regulations and standards, flag state rules and policies to establish the framework, but it takes a lot of effort to refine what's inside, and cruise majors like Carnival Cruise Lines and Royal Caribbean Cruise Lines have spent more than 50 years establishing and improving their safety management systems. China's cruise sector is still in its infancy for SMS, and it will take time to define the specifics and address any legal or regulatory issues. Thus, Chinese cruise lines must stand tall, adapt to the Chinese market, and learn from others. The domestic cruise firm should follow national rules while creating its internal SMS. In addition, they should make appropriate innovations according to our own characteristics, such as designing for different needs to meet market demand; the domestic company should also borrow the methods adopted by other domestic counterparts and study them with our national conditions to really improve the cruise ship safety management system.

SMS in China flag cruise ships will be the focus of the mixed-methods research:

1. Literature research: A detailed evaluation of SMS installation for cruise ships will uncover best practices and obstacles.
2. FSA study to assess legislation and SMS refinement concerns in China.

3. China cruise firm training development using SWOT analysis.

The paper has six chapters:

Chapter 1 presents the paper's background, importance, and primary findings.

Chapter 2 covers hypotheses. It reviews SMS, the cruise business, and multinational cruise firms' SMS development.

SMS is analyzed in Chapter 3. SMS's development approach reveals issues.

Chapter 4 analyzes chosen issues. To find answers, use FSA, SWOT, and GAP analysis on China's cruise legislation, SMS, and training.

Chapter 5 covers China domestic cruise company SMS improvements. It is advised to build the cruise ship safe act in China, draw excellent experience from worldwide cruise firm, and combine with China national scenario to enhance SMS, notably security, medical, and training.

Chapter 6 concludes this work, highlighting its primary findings and weaknesses.

Key Words: Cruise Operation; Safety Management System; Cruise legislation; China cruise industry.

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LIST OF ABBREVIATIONS

CCM	Company Contingency Manual
CLIA	Cruise Lines International Association
CM	China Merchant
CMVIKING	China Merchant Viking Cruise Line
CNKI	China National Knowledge Internet
CCTV	Closed Circuit Television
COM	Company Operational Manual
COVID	Corona Virus Disease
CVSSA	Cruise Vessel Security and Safety Act
DOC	Document of compliance
EU	European Union
FSA	Formal Safety Assessment
HACCP	Hazard Analysis and Critical Control Point

ILO	International Labour Organization
IMO	International Maritime Organization
ISM	International Safety Management
ISPS	International Ship & Port Facility Security Code
ISO	International organization of standardization
MARPOL	The International Convention for the Prevention of Pollution from Ships
MSC	Maritime Safety Committee
MSMS	Medical Safety Management System
NCL	Norwegian Cruise line
RCCL	Royal Caribbean Cruise Line
SAFEDOR	Design, Operation, and Regulation for Safety
SMM	Safety Management manual
SMP	Safety Management procedure
SMS	Safety Management System

SOM	Ship Operation Manual
SOLAS	International Convention for Safety of Life at Sea
SO	Strength-Opportunities
SSP	Ship Security Plan
ST	Strength-Threat
STCW	Standards of Training, Certification and Watchkeeping
SWOT	Strength Weakness Opportunities Threat
VCM	vessel Contingency Manual
WO	Weakness- Opportunities
WT	Weakness- Threat

Chapter 1 Introduction

1.1 Background

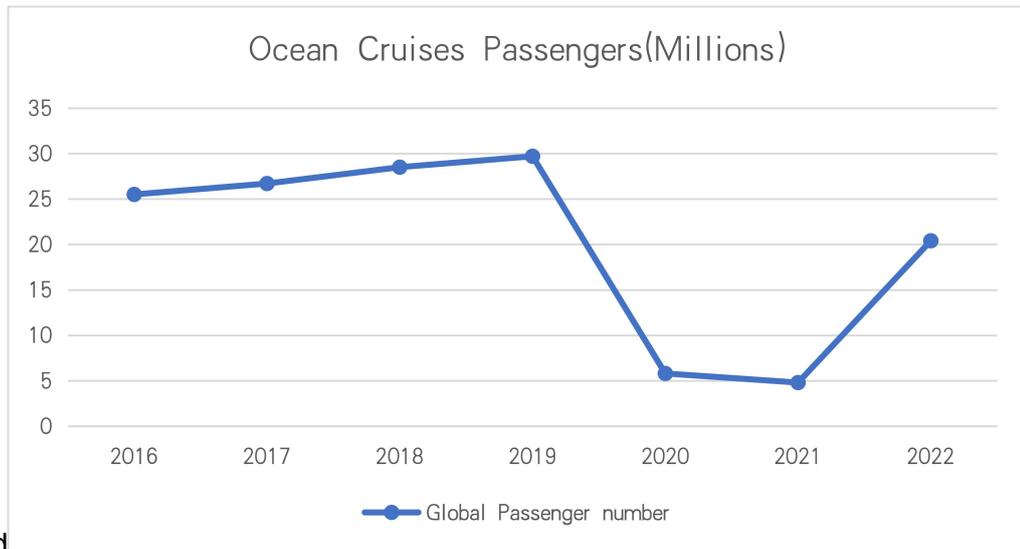
The cruise sector represents the high-end of the tourism and shipping industries, and it is the category in the leisure travel market that is increasing at the quickest rate. The world's leading cruise lines, such as Carnival, Royal Caribbean, and Viking, have been in business for more than half a century and have expanded their fleets so that they can serve customers all over the world and provide them with a high quality of life. In comparison to developed countries like the United States, Australia, and the United Kingdom, where the cruise industry penetration rate is approximately 3% (the number of people who actually consume cruise products divided by the number of people who have the ability to consume cruise products), the cruise industry penetration rate in China is less than 1%. (Jiao, Y., Hou, Y., & Lau, Y. 2021)

It is anticipated that China's cruise market will enter another lucrative opportunity as a result of the continued growth of China's economy and the improvement in the overall direction of the corruption situation in China.

The global cruise ocean going passenger data show that Asia cruises passengers almost have the same trend as global cruises passengers, however the cruises market in Asia, particularly in China, has experienced a major reduction as a result of the COVID-19 pandemic and China's severe COVID regulation. It is anticipated that the cruise market in China will return to normal and become even stronger in comparison to its previous state as a result of the Chinese government's decision to roll back its COVID policy and its recent release of a strategy designed to stimulate the recovery of the country's cruise industry.

Figure 1

Global passenger number

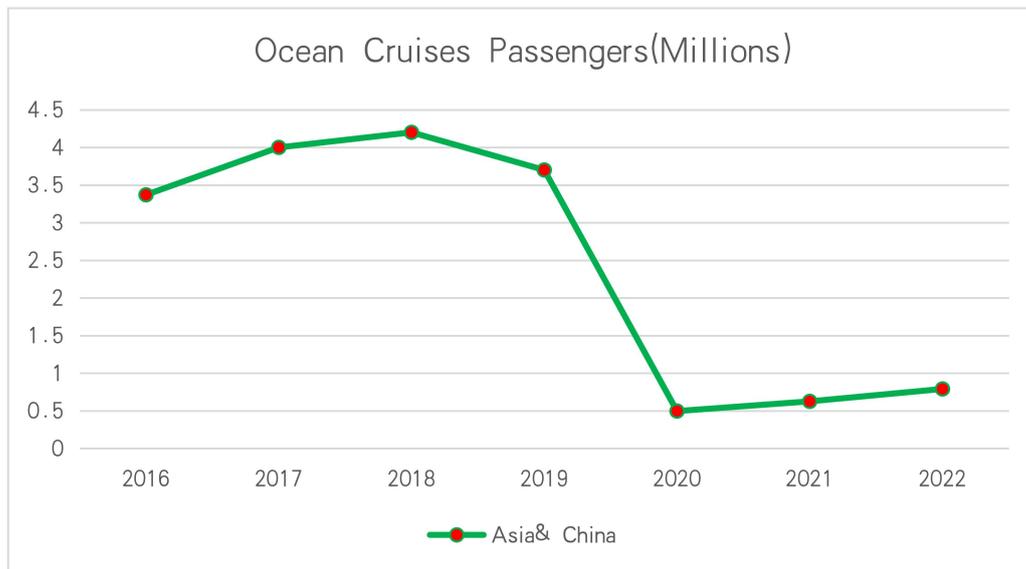


trend

Notes : Adapted from *2022 Global Passenger Report. (2023)*. Cruise Line Industry Association. <https://cruising.org/en/news-and-research/research/2023/march/2022-global-passenger-report>. By CLIA, 2023. Copyright 2023 by CLIA

Figure 2

Asia & China passenger number trend



Notes : Adapted from *2022 Global Passenger Report. (2023)*. Cruise Line Industry Association. <https://cruising.org/en/news-and-research/research/2023/march/2022-global-passenger-report>. By CLIA, 2023. Copyright 2023 by CLIA

It is anticipated that Asia, and China in particular, would be the future center of the cruise market. As a result, even with the influence of COVID, China's domestic cruise businesses have begun their research into the cruise industry. The China Merchant Group's Viking cruise line, Astro Ocean Cruise, Blue dream cruises line, and Adora Cruises line are other examples. The vast majority of them have purchased previously owned cruise ships and have marked them with convenience flags, but some of them are planning to flag their cruise ships with the Chinese flag or have already done so. It is a good start for the healthy development of China's cruise industry, but because there is no top-level design and overall planning for the development of the cruise industry, there is frequently uncertainty and hesitation. As a result, there has been a slow movement for China's cruise industry, particularly in terms of the safety management system.

The Safety Management System (SMS) is governed by laws and regulations, including SOLAS, MARPOL, and STCW, among others. However, the SMS used in the cruises industry is indeed a complicated system due to the large number of people who are involved in its operation, as well as the extremely high safety requirements and standards. Therefore, the SMS needs to be improved in order to allow for the system to be run without any hiccups. When compared to the China domestic company, which has only recently entered the cruises business, and cruises law and regulations that are less developed, the international cruises companies have developed over a period of more than 50 years; developed countries such as the United States have the law to support cruises company SMS.

Therefore, the SMS of China's cruise companies is not in sync with the development of China's cruises industry, and this disconnect is the industry's weakest link. This article intends to adopt a combined theoretical and practical model, conduct research based on the experience of the first Chinese flagged cruise ship as well as the author's own working experience, refer with SMS from international cruises line as well as laws and good practices, and try to find a good model to develop a detailed SMS optimal solution in line with China's national conditions and the world's cruise development trend.

1.2 Significance of this study

The importance of this research can be broken down into two categories: theoretical and practical.

In the context of there being no particular SMS for cruise ships flying the Chinese flag, the theoretic degree of significance will primarily concentrate on the creation of safety standards and laws pertaining to the cruising business in China.

Practice-level significance will primarily focus the research on providing clear guidance on how to make cruises SMS with Chinese flagged ship, proposing an SMS to match the various stages of development of Chinese flag cruise lines, and providing support and laying the foundation for Chinese flag cruise ships or Chinese cruise ships flying other flags.

1.2.1 Theoretical level of significance

According to the ISM, all cruise lines are required to have an SMS in order to guarantee passenger safety at sea, reduce the risk of injuries and fatalities, and prevent harm to the environment, in particular the marine environment and property (The International Safety Management (ISM) Code, 2018).

In today's day and age, the majority of cruise lines are based in industrialized nations. These include Royal Caribbean Cruise Line, Carnival Cruise Line, Norwegian Cruise Line, Viking Cruise Line, and many others. The SMS used by these cruise majors is extremely extensive, and as a result, it satisfies the requirements of several international treaties and regulations. Furthermore, and perhaps most importantly, it incorporates some of the good safety practices that their firms have created.

The theoretical relevance of this article is summed up in the following elements, despite the fact that China's cruise sector is experiencing a strong growth rate, but

the SMS of local cruise companies is still in the early stages of development.

- 1) Propose an SMS that is appropriate to the Chinese Flag cruises company by drawing on the relevant successes of worldwide cruise giants and combining them with the reality of Chinese cruise ships at this time.
- 2) In light of the fact that China is lagging behind other countries in terms of cruise laws and regulations, in order to meet the requirements of safety development, to propose corresponding countermeasures and suggestions for safety, security, medical, training, and other issues in cruise safety system, and in order to expect the theoretical reference for the competent authorities to formulate the related laws and regulations, the refinement of SMS will be done by domestic cruise lines under the auspices of the China Cruise Lines Association.

1.2.2 Practical level of significance

The current global cruise business is still monopolized by few cruise giants, the cruise giants influence the development trend of the industry by complete SMS, and the created international complete legal system also gives strong protection for these cruise giants. Despite this, the world cruise market is still dominated by cruise giants. As a relative newcomer to the cruise industry, China has only recently begun to develop its own SMS, as well as laws and regulations to regulate the operations of cruise companies. This is being done in order to provide protection for the continued and healthy growth of cruise ships in the future.

On the basis of the present development of cruise ships flying the Chinese flag, the SMS needs to be refined with a focus on security, medical care, training, and crew management, among other things. The practical value of this study can be summed up as follows:

- 1) Use the issues that have arisen as a result of safety management incidents as the starting point, and conduct an analysis of the SMS.
- 2) Using the influence that the rules and regulations of various nations have on cruise ships, come up with the best possible solution for the development of the SMS used by the Chinese cruise line.
- 3) In light of the way in which domestic SMS is being operated right now, suggest

a standard model of SMS for its ongoing and upcoming development.

1.3 Current status of domestic and international research

1.3.1 International research

IMO paid a lot of attention to passenger ship safety between the years 2000 and 2010, and as a result, the 72nd session of the IMO's MSC resolved to add a working group to improve the safety of big passenger ships and urged member states to submit recommendations to the 73rd session. Since then, several member countries have been actively carrying out safety studies on large passenger ships, especially the EU countries and the US. As a result of these efforts, a number of high-quality research results have emerged during this period, with representative ones including the EU's SAFEDOR (Design, Operation, and Regulation for Safety) project (Batalden, B. & Sydnes, A. K. 2014), Norway's comprehensive safety assessment study on passenger ship navigation safety, the US Coast Guard's preliminary study on risk, etc., amongst others.

The incident that occurred on the Costa Concordia in 2012 prompted the IMO to update the requirements of the agreements on passenger drills and breakage stability, passenger ship emergency familiarization training, and other related topics. (Safety and environmental standards on passenger ships, n.d.) As an organization that represents the industry as a whole, CLIA has also proposed a set of guidelines with the goal of improving safety procedures.

To summarize, the majority of the attention paid by international researchers to the subject of cruise ship safety concerns was concentrated on the years 2000 through 2005. The pattern of larger cruise ships has been more noticeable over the course of the past 10 years or more, and the routes have also evolved to some degree, with a gradual increase in the number of cruises that sail to the polar regions and via Asia. The protection of passengers on board ships was not a focus of the IMO's most recent development strategy, which covers a period of six years, and this issue has not gotten adequate attention.

The article by Mr. Ved P. Nanda, "U.S. Law and Policy for the Cruise Industry," analyzes the laws and policies of the United States that apply to the cruise industry, as well as the ongoing efforts to further strengthen the laws and regulations that are pertinent to the industry in order to fill the gaps that are still present. This article serves as a useful reference for the Chinese cruise industry (Nanda, 2022). The article "The ISM Code and the ISPS Code: A Critical Legal Analysis of Two SOLAS Regimes" by Mr. Proshanto K. Mukherjee provides an analysis of the ISPS and ISM codes from the law perspective, which gave a legal guideline of safety management system (Mukherjee, P. K. 2007).

Learning from failures in the cruise ship industry: The blackout of the Viking Sky in Hustadvika, Norway brings attention to learning from the failure - blackout, loss of propulsion and near grounding - of the Viking Sky cruise ship which occurred in Hustadvika, Norway, in March 2019 (Ibrion, M., Paltrinieri, N., & Nejad, A. R. 2021). Some of the things that were learnt can be summed up as an SMS failure, and as a new joiner to the cruise industry in China, cruise stakeholder should learn from this and try to prevent it.

1.3.2 Domestic research

Li Jiang addressed the primary risk factors that affect the safety of passenger ship operations on the Yangtze River mainline. He also built a risk assessment model for passenger ship operations on the Yangtze River based on modern risk management concepts, proposed criteria for identifying major risks in passenger ship operations, and established a control model for major risks in passenger ship operations (Jiang, L. 2017).

The causes of passenger ship accidents and casualties were investigated by Yu Jagan and Liu Zhengjiang, who concluded that the comprehensive safety assessment method has good application prospects in controlling passenger ship risks and improving passenger ship safety (Yu & Liu, 2018). This was determined with the assistance of typical passenger ship accident cases that occurred in recent

years.

Wang Jing's research provides a supply and demand forecast as well as a gap-bridging analysis of cruise ship crew talent. The research forecast and assess the supply and demand situation of cruise crew talents in China using the Holt index smoothing forecasting method and the empirical forecasting approach (Ye et al., 2022). A gap analysis was conducted from the government, enterprises, schools, and associations, and measures were proposed to bridge the gap and build a collaborative cultivation path for cruise talents. It was found that the shortage of cruise crew talents in China will probably exceed 400,000 by the year 2025. This information was combined with the stakeholders involved in the national talent cultivation effort, and the results were used to conduct the gap analysis.

There is not so much research on cruise ship SMS in China, when use key word "Cruises ship safety management system" in CNKI.com, there is only 80 results pop out, and key word is more focus on safety management of the new building cruise ship, there is only one article focus on the crew management for Chinese flag cruises ship which related to the SMS, its analysis under China five red star flag, how CM company do the crew management.

The findings of the domestic study section indicate that there is a dearth of research on cruise ship SMS, particularly for ships flying the Chinese flag. This finding also indicates that the stakeholders in China's cruise business need to focus their attention on this specific sector. Safety is always the top priority in the cruise industry, and SMS is the bible to make it successful.

Current international cruise companies have a detailed SMS that works for them, and even though there are still some gaps between laws and real operation, there are at least some laws in place as a guidance. In comparison to this, there is not a lot of research done in China, and cruise companies in China do not have extensive SMS in place. This lack of research has slowed down the development of China's cruise business, and it will also impair the safe operation of the cruise business in China.

1.4 Research ideas and methodology

1.4.1 Research Ideas

The Chinese flag SMS and the challenges it is currently facing are the primary topics of discussion in this article. The next step is to use the case study to point out the issues with the current SMS, such as safety, training, medical and security issues, etc., compare the domestic and international regulations and policies on the safety and security of cruise ships, and utilize the methodology such as GAP, FSA, SWOT, etc. to propose measures that are appropriate for the SMS of the Chinese cruise company.

The paper is divided into six chapters:

Chapter 1 is the introduction, which introduces the research background, research significance and main research contents of this paper

Chapter 2 is related theories. It summarizes the concepts related to the cruise industry, SMS and its history, and introduces the development of international cruises companies and its SMS

Chapter 3 is the analysis of the current situation of China domestic cruise company SMS. By analyzing the development strategy of the domestic cruises company SMS, the problem encounter and problems are analyzed.

Chapter 4 is the selected problems analyzing. Through the analyzing, to explore the solutions. Generally, the paper focus on the cruises ship security, training and medical.

Chapter 5 is the measures to improve the SMS for China domestic cruise company. It is suggested to establish the cruises ship safe act to improve the SMS and borrow the good experience from international cruise company.

Chapter 6 is the conclusion, expounding the main research results of this paper and pointing out the shortcomings of this paper

1.4.2 Research methodology

Research will be carried out using a mixed-methodologies approach, and the following research methods will be utilized:

- 1) Literature review: A thorough analysis of the existing research published on Springer, Web of Science, and the China National Knowledge Infrastructure website, The report from the Cruises Line International Association, research on the articles and statistics, and a literature review on the deployment of SMS for cruise ships will be carried out in order to identify the issues that now exist and the difficulties that must be overcome.
- 2) Case study: An approach based on a case study will be utilized in order to explore the SMS implementation for cruise ships flying the Chinese flag. The author will collect data through his personal working experience, observation, and examination of relevant documents.
- 3) Determine the issue at hand and put the remedies into effect by employing SWOT, GAP, and FSA analyses.

Chapter 2 Related theories Regulations of SMS

2.1 Safety Management System

The acronym "SMS" stands for "safety management system," and it refers to a standardized, enterprise-wide set of procedures that facilitates efficient, risk-based decision making for day-to-day business operations. SMS enables businesses to deliver their products or services while maintaining the highest possible level of safety and to continue to run safely. Hazard identification, occurrence reporting, risk management, performance assessment, and quality assurance are the core processes that make up a safety management system.

Figure 3

Safety management system
flow



Notes: Adapted from Tarlengco, J. (2023, March 27). What is Safety Management System (SMS)? | SafetyCulture. SafetyCulture. <https://safetyculture.com/topics/safety-management-system/>. Copyright SafetyCulture 2023

The International Safety Management (ISM) Code was adopted by the IMO in 1993. This code stipulates that all shipping corporations that operate specific types of ship are required to set up SMS.

The purpose of ISM Code is to ensure safety at sea, prevent casualties, avoid damage to the environment, particularly to the marine environment, and avoid damage to property (The International Safety Management (ISM) Code, 2018). The goals of the company's safety management program include, among other things, the provision of safe ship operating practices and a safe working environment, the establishment of safety precautions for all risks that have been identified, and the ongoing improvement of the safety management skills of personnel both ashore and on board, including readiness for and response to emergencies relating to safety and environmental protection. Compliance with obligatory rules and regulations, as well as applicable norms, guidelines, and standards, all of which are advised by the IMO, classification organizations, and maritime industry advices must be ensured by the SMS.

Explain the concept that is associated with cruise ships. SMS, overarching policies and procedures, and the policies themselves should convey the amount of dedication the shipping company has to safety, security, environmental protection, and quality in its day-to-day operations.

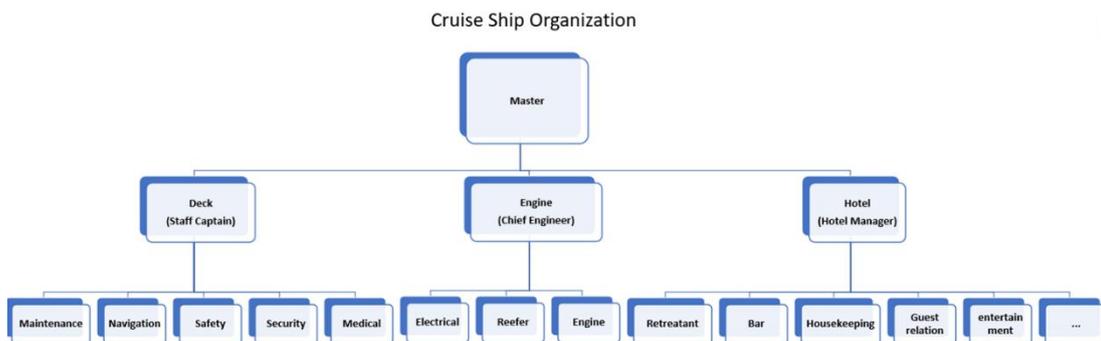
The SMS of a cruise ship provides the direction for consistent operations and continual improvement; it identifies all the rules and regulations that need to be followed and shows the ways to achieve those rules and regulations; it provides job descriptions for each crew member and shoreside staff member; it provides a way to monitor that crew members are doing jobs properly; and it details the emergency responsibilities and how to respond in the event that an emergency occurs. The policies and procedures in the SMS are designed to ensure compliance with:

- ISM Code (International Safety Management)
- ISO 14001(A set of standards for environmental management systems)
- ISO 9001(A set of standards for quality management systems)
- ISO 50001(International organization of standardization, A set of standards for energy management systems)
- ISPS Code
- MLC 2006
- CLIA Compendium of policies, as applicable.
- Applicable International, Flag State and Port State Requirements
- The International Convention for the Prevention of Pollution from Ships (MARPOL);
- The International Convention for the Safety of Life at Sea (SOLAS);
- The International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW);
- "Pathogen Reduction: Hazard Analysis and Critical Control Point" (HACCP) system.
- Manufacturers' Operating & Maintenance Recommendations, as applicable
- Other rules and regulations, as applicable.

2.2 Onboard organization

On a cruise ship, there are typically three departments: the Deck department, the Engine department, and the Hotel department. These three departments are all under the control of the master. For reference, please check the Figure below.

Figure 4: Cruise ship organization



Note: the figure was done by author

The Deck department is in charge of things like maintenance, navigation, safety training, security, and medical, and the Staff Captain is in control of the department.

The Chief Engineer oversees the Engine Department, which is responsible for the engine, population, reefer, and electrical systems.

The Hotel Department is in responsibility of providing service to both guests and crew members, while the Hotel Manager is in charge of the Hotel Department. In general, there is just one more department than on a cargo ship; nevertheless, when compared with a cargo ship, in reality, there are considerably more crews and operations involved. From the point of view of safety, it is essential to set up a safe atmosphere and culture in order to ensure safe operation with such a large number of personnel.

Because a cruise ship is not only a ship but also a floating city, it carries a large number of crews and passengers and there are a lot of activities onboard. As a result, crew and passenger rotation is very quick; consequently, a detailed SMS

should be applied in order to ensure that each operation is carried out without any hiccups. For your convenience, a reference table has been provided below.

Table 1

Capacity for different class of cruise ship

Cruise ship Name	GT(Ton)	Crew	Passenger
Icon of the Seas	250800	2350	7600
MSC World Europa	215863	2138	6762
MSC Meraviglia	171598	1608	5642
Brilliance of the Seas	90090	848	2543
ZhaoShangYidun	47825	480	930

Note: Adapted from Chanev, C. (2023a, May 13). Cruise Ship Passenger Capacity. *CruiseMapper*. <https://www.cruisemapper.com/wiki/761-cruise-ship-passenger-capacity-ratings>. Copyright 2023 by CruiseMapper

2.3 FSA analysis

FSA, which was initially established in part at least as a response to the Piper Alpha catastrophe of 1988, in which an offshore platform exploded in the North Sea and 167 people lost their lives, is currently being used to the process of rule development by the IMO (IMO, Formal Safety Assessment, 2018). This accident occurred when an offshore platform detonated in the North Sea. In order to improve maritime safety, which includes protecting people's lives as well as their health, the environment, and their property. The FSA is a tool that may be used to assist in evaluating new rules linked to maritime safety and the conservation of the marine environment. The Formal Safety Assessment technique was created by the IMO as an organized and systematic methodology. Or, compare the regulations that are already in place, as well as any potential improvements to those regulations, with other potential improvements to those regulations, in order to strike a balance between the many different technical and operational issues, including human and environmental issues.

The FSA is composed of the following five steps:

- Identification of hazards (a list of all relevant accident scenarios with potential

causes and outcomes);

- Assessment of risks (evaluation of risk factors);
- Risk control options
- Cost benefit assessment (determining cost effectiveness of each risk control option); and
- Recommendations for decision-making (information about the hazards, their associated risks and the cost effectiveness of alternative risk control options is provided (International Maritime Organization. (2018, April 9). Formal Safety Assessment).

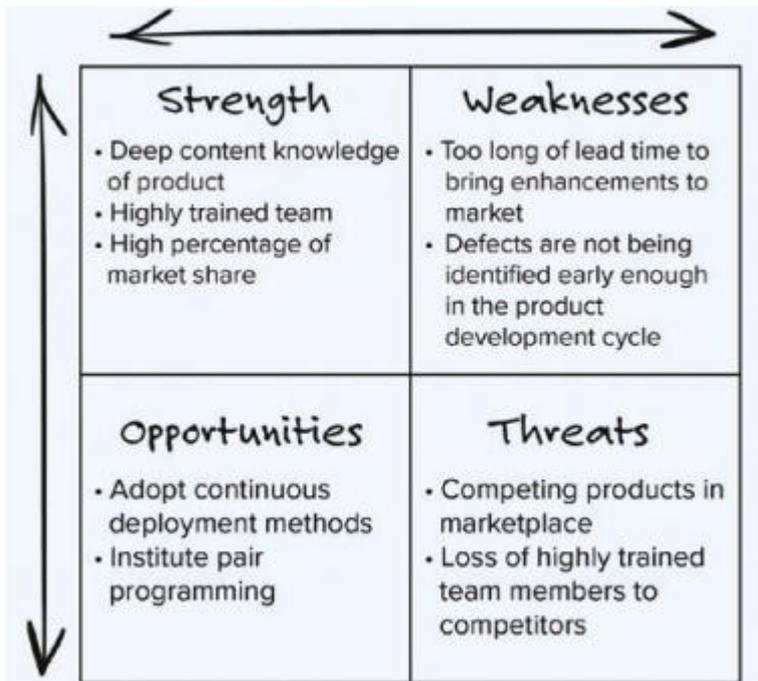
2.4 SWOT analysis

A firm can improve its strategic planning with the use of a technique called a SWOT analysis, which stands for a Strengths, Weaknesses, Opportunities, and Threats analysis. This type of analysis helps a business determine its own opportunities and threats, as well as its own strengths and weaknesses. Additionally, it is a useful instrument for agile teams to use as a jumping off point for a project or sprint when they put it to use.

In most instances, the SWOT analysis is depicted as a square that has been divided into four quadrants, the Strengths, Weaknesses, Opportunities, and Threats analysis is broken down into four quadrants, each of which represents a different factor (Dalton, J. 2019).

Figure 5

SWOT analysis square



Note: Adapted from Dalton, J. (2019). SWOT Analysis (Strengths, Weaknesses, Opportunities, Threats): An OS for Agile Leaders. In *Great Big Agile* (1st ed., pp. 249–252). Apress Berkeley, CA. https://doi.org/10.1007/978-1-4842-4206-3_62. Copyright Jeff Dalton 2019.

Chapter 3 Analysis of SMS in China’s Cruise Line

This chapter focuses primarily on the development of a domestic cruise ship safety management system by using the first cruise ship to sail under the Chinese flag as an example. It then analyzes the safety management system while simultaneously analyzing the existing problems and future development directions for the current state of the cruise ship safety system.

3.1 Case study- about CMVIKING

Established in 2020 by China Merchants Shekou, a 100-year-old central enterprise and one of the world's top 500 companies, together with Viking Cruises, a river and ocean cruise company that has won many prestigious cruise awards at home and abroad, the company is committed to building a medium-sized luxury cruise product featuring Chinese high-profile clientele and becoming the world's leading high-end

cruise operator. The company acquired the Viking Sun, a luxury cruise ship rated as one of the world's "best small and medium-sized cruise ships" by industry authorities Berlitz Guide and Cruise Critic, and registered the ship as a Chinese nationality- "ZhaoShangYiDun", making it the first Chinese flag luxury cruise ship in China. The ship was built in 2017 in Fincantieri shipyard in Italy, the length is 228 meters long, breadth is 28 meters, gross tonnage is 47800 tons, the crew capacity is 480 and guest capacity is 930, it is a middle size luxurious cruise ship. After a three-day initial audit of system documents, system operation, and representative ship audits, the Shenzhen Maritime Administration issued a "Document of Compliance" to China Merchants Viking Cruises Limited, the first five-star flag luxury cruise line in China, on site on January 29, 2022. This is the first DOC issued to a luxury cruise line flying a five-star flag in China, signifying the first time a luxury cruise ship in China has attained independent safety management system.

China Merchants Viking Cruises' safety production standardization management system passed the audit of China Classification Society Quality Certification Co., Ltd. on 3 March 2022 and was awarded the first-class waterway passenger transport safety production standardization evaluation, marking a new step in the integration of international safety management rules and domestic safety production standardization management practice (Xie & Guo, 2023).

3.2 CMVIKING SMS current status and problem analysis

By doing an in-depth examination of the company's current safety management system, with the goal of establishing a solid basis for the future safety management system of the Chinese flag fleet and developing a cruise ship safety management system that is both safe and beneficial to the environment.

3.2.1 Current SMS status

CMVIKING operates with its very own SMS, which ensures

- Compliance with the prerequisites of the ISM Code and the efficiency of the safety management system.

- Adherence to all obligatory international conventions, domestic legislation, and international regulations that are applicable.
- The consideration of all relevant codes, guidelines, and standards, as recommended by the Organization, the Administration, classification societies, and maritime industry groups.

The SMS has clear requirement for below:

- Safety and environmental-protection policy.
- Instructions and procedures to ensure safe operation of ships and protection of the environment in compliance with relevant international and flag State legislation;
- Defined levels of authority and line of communication between, and amongst, shore office and shipboard personnel.
- Procedures for reporting accidents, hazardous situation and non-conformities with the provisions of this Code.
- Procedures to prepare for and respond to emergency situations.
- Procedures for internal audits and management reviews.
- Establish, implement and maintain effectiveness evaluation procedure.

The current SMS for CMVIKING generally established and fully compliance with all requirement, SMS is the key for operation the company and ship, the objectives is to provide direction for consistent operations and continual improvement, fleetwide and ashore. The SMS system using in CMVIKING is originally from Viking Ocean cruise lines. The CMVIKING team has adopted and modified some parts which required by Chinese regulations, laws, and China classification society. The SMS included safety management manual (SMM), Safety management procedure (SMP), Company contingency manual (CCM), Ship operation Manual (SOM), Company Operational Manual (COM), vessel Contingency Manual (VCM), Duty& Responsibility of Shipboard Personnel. The SMS also uses procedures to provide guidelines for standardizing the review activities of the Company's safety management system, aiming to verify the conformity of the Company's safety management system documents with the International Safety Management Code.

All of those SMM was uploaded to the servers and can be accessed by website, any qualified users can access by user name and password, comments can be added if any.

3.2.2 Analysis of the gap between the existing CMVIKING SMS and the development needs of cruise ships

Gap Analysis

One of the methods of strategic analysis is known as gap analysis, which is also known as variance analysis. This method involves determining whether or not there is a difference between the two, and if there is a difference, the reasons for it are further analyzed, and the decision makers formulate measures to reduce or eliminate the gap according to the problem. In this article, we will examine and discuss three holes pertaining to the SMS (Laoyan, S.2022).

A high level of professionalism and refinement in management is required for a cruise ship safety management system, and each management regulation needs to be detailed according to ISM code, ISPS code, ISO9001, ISO5001, ISO14001, OHSAS1800, and cyber security, among other standards.

Even though the cruise industry in China has grown at a rapid pace over the course of the past few decades, CMVIKING is the first cruise firm in China's cruise industry to be managed by Chinese nationals. When compared to the industry's major cruise lines, the SMS is lacking in management in several different aspects of the company's operations.

1) Crew management gaps analysis

The work on luxury cruise ships is demanding, there are a great deal of service items, and the service groups that the crew must deal with are extremely large. The crew members who work on cruise ships are required to have a high level of professionalism and comprehensive quality; otherwise, it would be difficult to ensure that the quality of the product and the safety of those onboard are maintained. All

the crew members on the CMVIKING are Chinese because it is a cruise ship flying the Chinese flag.

Although there are some Chinese crew members who entered the cruise industry at an early stage and have since risen to prominent positions with international cruise lines, most of the crew members currently on board have no prior experience working on cruise ships, refer to table 2 of the China Marine authority's 2019 report for passenger ship employee statistics.

Table 2

2019 seafarer count aboard passenger ships for international voyages

Class	Capacity	Numbers(person)
3000 gross tonnage or above	Master	387
	Chief Mate	244
	Second Mate	343
	Third Mate	279
3000 KW propulsion power or above	Chief Engineer	371
	2 nd Engineer	148
	3 rd Engineer	236
	4 th Engineer	122

Note: Adapted from "Size and composition of the international maritime workforce in 2019. <https://www.msa.gov.cn/public/documents/document/mdmw/odu5/~edisp/20201222030859343.pdf>, by China MSA, 2020. Copyright 2020 by China MSA.

As the cruise industry is an international industry, its international cruise crew quality requirements are high, comprehensive ability, only having professional skills is far from being able to meet the needs of the industry's continued expansion, the crew needs to have a strong theoretical knowledge base, international vision, in order to deal with a variety of possibilities; they also need to have a strong language and intercultural communication skills, and in order to strengthen their position in the industry, they need to have a strong theoretical knowledge base, international vision, and in order to In addition, a high level of mental and physical health is required for tasks done at sea due to the enclosed working environment. To sum up It is abundantly obvious that in order to be competitive on the international stage, one

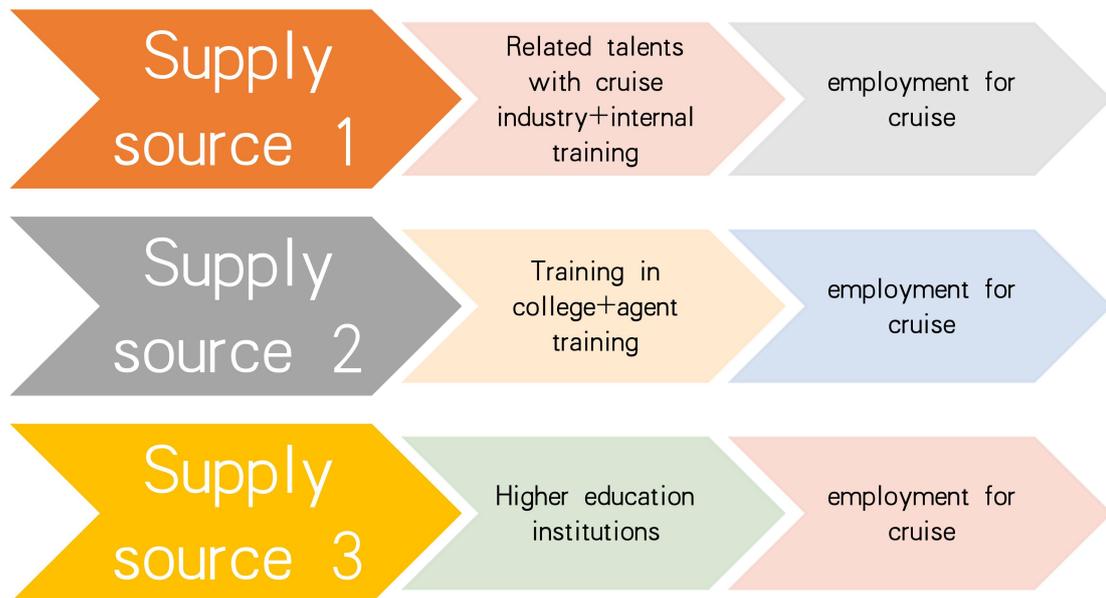
needs highly qualified employees who possess a complex set of talents (Ye et al., 2022).

For the time being, the current crew team is the only one that can meet the compliance requirement. However, in order to supply the cruise product in a safe and effective manner while remaining a competitive industry participant, the crew will need to be enhanced.

2) Crew training gaps analysis

Training is essential to get high quality crew members, right now there is three ways in China to get cruises ship crew, one is to poach talents in other industries related to the cruise industry, such as the hotel industry, catering industry and other industries, and then to train them internally, which greatly reduces training costs and can solve the problem of talent shortage in a short period of time, but the staff loyalty is low and the turnover rate is high; second is that after students have experienced education in secondary and higher education institutions, they then go through vocational training by intermediary companies(agent) to obtain relevant qualification certificate, thus entering the cruise industry to work, those kind of employees have serious working attitude and high motivation, but the short-term training makes the employee loyalty is not high, thus increasing the cost of follow-up training; thirdly, the students learn the theory and practice in higher education institutions, and after graduation, they directly enter the cruise ship and related industries for employment. This approach accomplishes "order training," which encompasses both theoretical knowledge and practical experience, and it satisfies the needs of the cruise industry; nevertheless, the starting cost is large and the time period is long (Ye et al., 2022).

Figure 6: Sources of supply of cruise talent in China



Note: Adapted from Ye, X., Wang, J., & Sun, R. (2022). Supply and Demand Forecast and Gap Bridging Analysis of Cruise Ship Crew Talent. *Proceedings of 2022 China Tourism Science Annual Conference* (pp. 513-525). Beijing: China Tourism Academy.

The training systems for cruise ship talent have been put into place, and while each of the three training models has its own set of benefits and drawbacks, the next questions to be addressed are those concerning the training subjects and the quality of the instruction. (Ye et al., 2022)

The training subjects that are now being worked on in CMVIKING are still being developed. Although they typically covered all compliance training, this is not enough for better development of the China cruise industry. The training subject's coverage is limited, and the content needs to be more extensive.

3) Security management system gaps analysis

Security management system as part of the SMS, dedicated to the protection, well-being and security of guests, shipboard employees, shoreside employees, terminal staff, vendor security staff, authorized visitors, vessels, and terminal internal facilities.

The Ship Security Plan (SSP) for CMVIKING has been approved by the relevant authorities. The primary objective of the SSP is to satisfy the maritime security sta

standards for ship operations that are outlined in the ISPS code. The security plan, which controls staff during embarkation and disembarkation, identifies passengers, conducts security checks, and so on, merely provides a guidance and a framework; it does not actually cover the many security events that take place onboard cruise ships nor does it offer an efficient reference. If the CMVIKING just utilizes SSP as the security system document to implement, then it will not be able to meet the ship security operation needs. This is because the CMVIKING is the first cruise ship to sail under the Chinese flag.

The professionals deliver the system guidance document to the ship, which is based on the repercussions of various levels of security incidents. After that, an assessment of the legal aspects of the responsibility and impact of the incident is performed, and ultimately, the ship receives the company level guidance document. The guideline paper will give policy support for the resolution of security events in ship operation, which means effective intervention at an early stage of the issue or before it creates a big impact. This is what is meant by the phrase "effective intervention at the early stage of the incident." Due to the absence of a system document, ship security is unable to take effective action during the early stages of an incident. Instead, they are required to wait until the perpetrator has engaged in some form of misconduct before taking action. After this, the captain makes the final decision regarding how to deal with the perpetrator, which may result in an escalation of the situation due to the lack of timely handling. When the staff or visitors refuse to participate or challenge the existing measures, it is impossible to find a justification for them. This is the most crucial thing to keep in mind. Now, regardless of the scale on which the cruise industry operates, virtually all of them are registered under a convenience flag such as that of the Bahamas or Bermuda (RCCL, NCL, CARNIVAL, P&O, and Princes). The jurisdiction, responsibility, and control of the ship are all exercised by the flag state. The cruise line also acts in accordance with the laws of the flag state, and the security personnel on cruise ships have the authority that is provided to them by those laws.

- With the endorsement of the company system, does the law of our flag state allow ship security to have the right to take enforcement measures?

- Are the types of riot control equipment that are typically found on cruise ships permitted?
- Is it possible to imprison and isolate individuals who have a history of violent tendencies?

At this time, China places policemen and air marshals on all of its primary modes of transportation. Does it have any relevance as a reference range, considering that it is a new mode of transportation and tourism and that just one of the cruise ships is now in operation? In the event that security guards are allowed to legally use the riot control equipment on board after obtaining the domestic land security qualification certificate, and in the event that security guards are required to obtain the relevant professional certificate as the qualification for the security personnel of Chinese Flag in the future, then further research is required.

3.3 Security related case study

A passenger who was under the influence of alcohol walked to the front desk area at about 2:00 in the morning and made an unreasonable request. After the request was not honored, the guest then verbally attacked the crew members working there. After receiving verbal abuse, the personnel at the front desk decided not to comply with the ridiculous request made by the intoxicated guest and instead phoned the supervisor of the department in which he worked to handle the problem. After the supervisor at the front desk intervened, the customer began to lose control of his emotions and began to verbally abuse and make physical movements in the front desk area. He also stated that he would leave the hotel if the issue was not resolved, which caused the supervisor to become concerned. The supervisor of the department got in touch with the security officer who was now on duty to intervene.

Case keyword analysis:

2:00 a.m., drunk, verbal abuse, emotionally disturbed, boisterous, physical actions, threats (jumping off the ship)

Following questions will be raised up:

First, if it is possible to take coercive measures against them before they hurt other person, and if so, whether the coercive measures meet the requirements of the

company and the law of the flag state, i.e., whether the actions of ship security personnel are appropriate after they have tased an intoxicated person. if it is possible to take coercive measures against them before they hurt other person, and if so, whether the coercive measures meet the requirements.

Secondly, ship's security guards, with the exception of the ship's master, do not have the authority to take coercive actions against the perpetrators (threatening the perpetrators' personal safety or the safety of others), and any such action would be illegal. Is it necessary to get in touch with the captain and the other senior members of the crew, given that the incident occurred in the wee hours of the morning? Is there a legally mandated range for the amount of constraint that can be used on the guest once the master's order has been acquired if the guest does not cooperate? Is it possible, for instance, to relocate a visitor who has threatened to jump ship to a room in the crew quarters that does not have windows even though the stateroom in which they are staying has a balcony? If this is the case, where does the line become drawn between legal and illegal detention? When passengers are assigned inside staterooms on a cruise ship, the cruise line should consider whether or not it is necessary to staff the ship with security personnel who will monitor the passengers continuously until it is time for them to disembark. Will the guest be moved to a different room in the event that they require medical attention during the "attention" period? Is the reaction provided by the ship leaving the guest's family feeling unsatisfied? How would the ship's security personnel react if a group of people, including a family, boarded the vessel with the intention of causing a disturbance at the front desk?

All of the questions raised above need to be checked, and their answers must be supported by the relevant laws and SMS. Because the cruise ship operates out in the open ocean, these kinds of events are bound to take place; therefore, it is necessary to have detailed SMS in order to guide the crew onboard in responding in a timely and effective manner.

Chapter 4 Discussions and suggestions

Refer to the Countries that have a well-developed cruise industry as well as multinational cruise lines' SMS for further information on how SMS is essential to the functioning of cruise lines.

The following measures will be applied to an examination of the Chinese flag cruise SMS:

The first step is to strengthen the legal framework governing the cruise ship business. Encourage the passing of laws and regulations regarding the management of cruise ship safety. According to the characteristics of cruise ships and the industries that are related to them, it is necessary to fully absorb the common practices of international cruise lines, combine the requirements of domestic laws and regulations, take into consideration the actual situation of cruise ships, adhere to the righteousness of innovation, research, and development of cruise ship safety management special laws and regulations, and make it clear that cruise ship operations and management, personnel qualifications, and activity management requirements are to be met.

The second step is to fortify the construction of the SMS, as well as to encourage the implementation and specifics of the safety management system. Establishing a detailed Safety Management System (SMS) and clarifying the working procedures during ship operation is necessary in order to fully identify all types of safety risks that may be present during the process of operating a ship, optimize and improve the emergency evacuation plan in a timely manner, pay special attention to security and medical operation, and improve the safe operation of the ship for passengers, crew, and the ship itself by using a detailed SMS.

Thirdly, the establishment of the training system in order to accelerate the cultivation of a cruise professional talent system; to learn and understand, use familiarity, and use the most recent safety management key technologies of international cruise ships; and to provide the domestic cruise industry with rise to provide knowledge reserves.

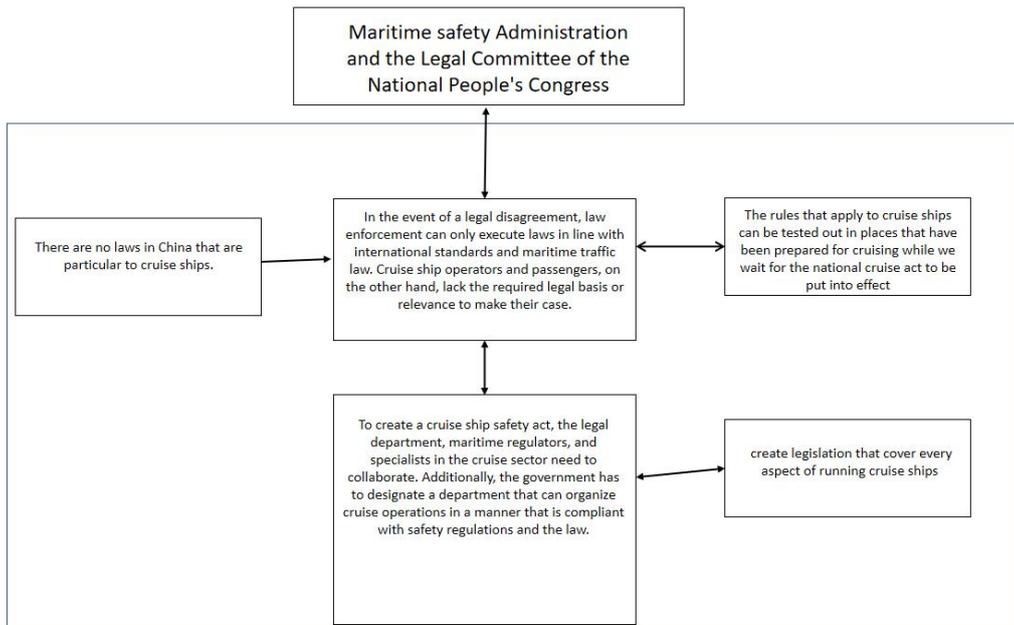
This chapter will concentrate on those three factors, and will use FSA to analyze the present law refinement and refine SMS. It will also use SWOT methodology to analyze, and will combine that analysis with SO, WO, ST, and WT to find the most effective options for setting up training.

4.1 Methodology developed by the FSA for use in reviewing legislative proposals and refinement of SMS

4.1.1 FSA of legislative proposals for cruise ship safe operations in China

Figure 7

FSA of legislative proposals for cruise ship safe operations in China



Note: Done by author

1) Identification of hazards

The idea of "tourism + maritime passenger transport" has resulted in an unclear distribution of safety responsibility for cruise operation and management, and there is no special legislation for cruise ships in China. Chinese cruise ships must abide by Chinese marine traffic laws, as well as any applicable civil or criminal laws and international conventions.

2) Risk analysis

In the event of legal disputes, law enforcement can only enforce laws in accordance with international regulations and maritime traffic law, and cruise ship operators and passengers lack adequate legal support or relevance. The International Convention for the Safety of Life at Sea (SOLAS) and the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW) have provisions on ship facilities and equipment and crew training to ensure the safety of ship operation. However, there are no provisions for the safety and security of cruise leisure and entertainment facilities, nor do they consider the impact of the characteristics of the navigable environment. (Su, 2022).

3) Risk control options

The author suggests adopting the legislative approach of "amending the existing law + adopting local regulations" based on the legislative mandate of the Legislative Law and the safe operation characteristics of China's cruise industry. Amending the existing law can solve the problems of national sovereignty, court power, limitations of individual law enforcement measures, and penalties with relatively few legal provisions and in a short amount of time; adopting local regulations can solve the problems that cannot be caused by regulations, such as inadequate disclosure of cruise operation safety information, the specificity of regional cruise operation safety problems, and working mechanisms. The adoption of a relatively flexible and brief legislative timeframe can expeditiously address the legislative requirements of cruise operation safety and security.

4) Cost-benefit assessment

The Cost Benefit analysis is not suitable for use as the sole technique of analysis and so should only play a limited part in the evaluation of public policy. Because it does not take into consideration the well-being of individuals or the normative impacts that policies have on society, the Cost Benefit analysis is not suitable for use as the sole way of analysis. In light of this, the cost-benefit analysis should take into account the impact that such laws would have on the cruise sector and how they will drive safe operational practices.

5) recommendations for decision-making

- Seize the opportunity to revise the Maritime Law in order to include provisions in the law that are related to the safety and security of cruise ship operations. The Maritime Law (Revised Draft for Public Comments) already takes into account

the aspects that pertain to cruise ships. These include the extent of application, compensation limits, and mandatory insurance. If the fundamental guidelines for the safety and security of cruise ship operations are included in the Maritime Law, it will be the same as raising the portion of Shanghai's and other locations' operating standards that pertain to ship safety to the level of the law.

- While the Tourism Law is being revised, be sure to include some provisions that pertain to cruise tourism in the new version of the Tourism Law. The General Office of the State Council issued the "Guidance on Promoting the Development of Territorial Tourism" in 2018, which makes it clear that cruise ship tourism is being actively developed. The Tourism Law includes specific provisions pertaining to the operation of tourism both in Chapter 4 (tourism operation) and Chapter 6 (tourism safety), respectively. Because cruise tourism is a mode of "tourism plus water passenger transport," the legislative management of the means of transport is more appropriate than the management of tourism behavior from a safety perspective. The Tourism Law also has the ability to make changes to the legal relationship that exists between visitors and the passenger transport businesses that are participating in river water cruises. In addition, the Tourism Law has the potential to further control regulations regarding the protection of vulnerable groups, such as the elderly, small children, and others. If the Tourism Law can be revised to include this portion of Shanghai and other places' operation norms pertaining to tourism, then that is also equivalent to bringing a portion of the content of ensuring the safety of cruise operation to the legal level, which is conducive to the application of the court in the trial.
- Encourage information security management and information services that are led by the department in accordance with departmental requirements. Since there is typically a lag between the formulation of pertinent laws and regulations and their implementation, it is possible to test out information services on cruise ship operation safety in the interim. We may first rely on administrative departments at all levels to strengthen the administration and service of cruise information and to develop precise restrictions on the disclosure of cruise operation information. This is especially important in the areas that involve both the personal safety of people and the safety of the nation as a whole. In light of

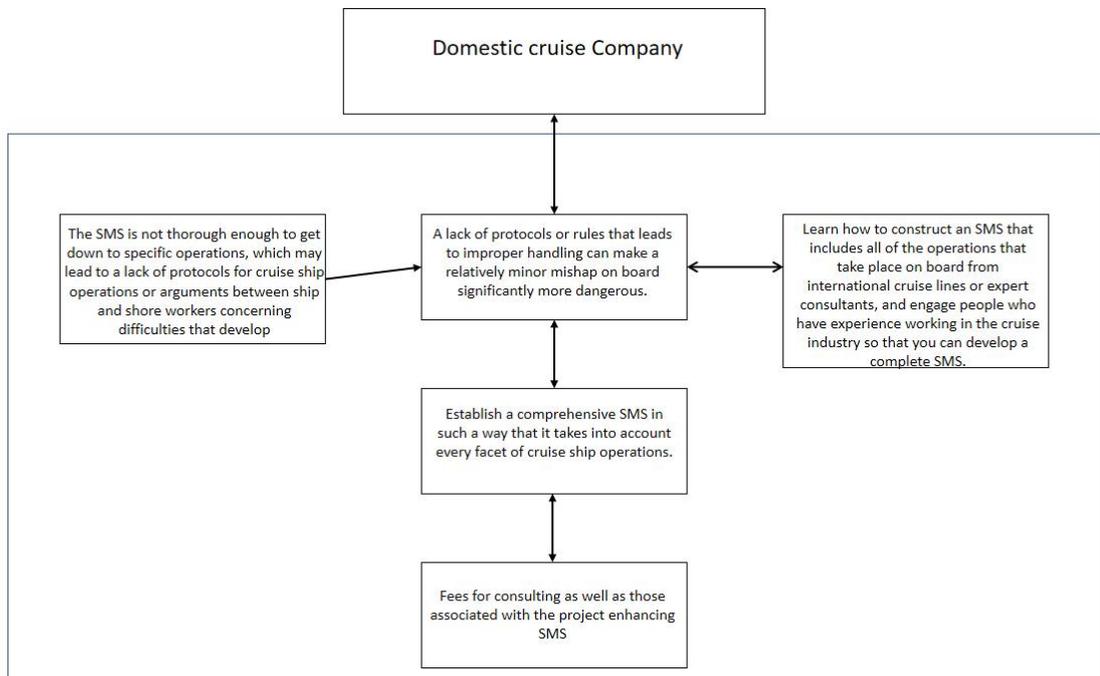
the dearth of domestic experience in this field, it is proposed that legislation in the field of sectoral rules be enacted in order to lessen the likelihood of opposition. To facilitate the supply of comprehensive information and other services by cruise ships, it is recommended that a pilot program for the establishment of a comprehensive data platform for cruise ships be carried out under the direction of the appropriate ministries and commissions. It is possible that the Ministry of Transport and the National Bureau of Statistics would be the best lead units to build such a platform. Other possible candidates include other government departments. The operators of cruise ship homeport ports should get robust backing from their respective municipal governments.

- Refer to the CLIA Cruise industry passenger bill of rights (Crow, M. 2020). and the Cruise Vessel Security and Safety Act (CVSSA) of 2010, in order to build up China's cruise vessel safety act in accordance with the situations and needs of the development of China's cruise industry.

4.1.2 FSA methodology with the goal of improving the SMS for the local cruise firm in China.

Figure 8

FSA for the purpose of refining the SMS for China's local cruise company



Note: Done by author

1) Identification of hazards

The SMS is not detailed enough to get down to specific operations, which may lead to a lack of protocols for cruise ship operations or arguments between ship and shore workers concerning difficulties that develop.

2) Risk analysis

A relatively harmless accident on board a ship may rapidly escalate into a potentially catastrophic threat if it is handled incorrectly. This is particularly the case in situations when there are no established norms or guidelines to direct the conduct of crew members. In the absence of well-defined rules in the SMS, members of the crew are more likely to act on impulse or base their judgments on insufficient knowledge. This may result in errors that put the wellbeing of the ship and its passengers in jeopardy. For instance, a member of the crew who is unaware how to react to a minor fire in the galley may attempt to put the fire out with water, not understanding that doing so might cause a grease fire to flare up. Another possibility is that a member of the crew who is not properly educated in the safe handling of hazardous goods might accidentally release a chemical that could endanger the health of other crew members or the environment.

3) Risk control options

It is necessary to have a comprehensive SMS in place that outlines the appropriate protocols for managing different scenarios on board a ship in order to reduce the likelihood of such catastrophes occurring. These instructions should be made crystal apparent to each and every member of the team, and they should be evaluated on a regular basis to ensure that they are accurate and useful. The members of the crew have the ability to reduce the likelihood of accidents and increase everyone's level of protection on board by adhering to the predetermined procedures and regulations.

4) Cost-benefit assessment

The cost-benefit assessment can consider from below aspects:

- Developing and implementing an SMS might require considerable financial expenditures, such as the cost of employing consultants, acquiring new equipment or software, and giving training to personnel. These costs can be offset, however, by the potential benefits that an SMS can provide.
- The cost of time is incurred while refining an SMS since it requires examining and changing rules, processes, and training programs. This may be a time-consuming process. Because of this, there may be periods of outage and decreased output.
- Opposition from Employees: Employees may exhibit opposition to changes made to the SMS, especially if they view the changes to be onerous or time-consuming. This may result in further delays and increased expenses.

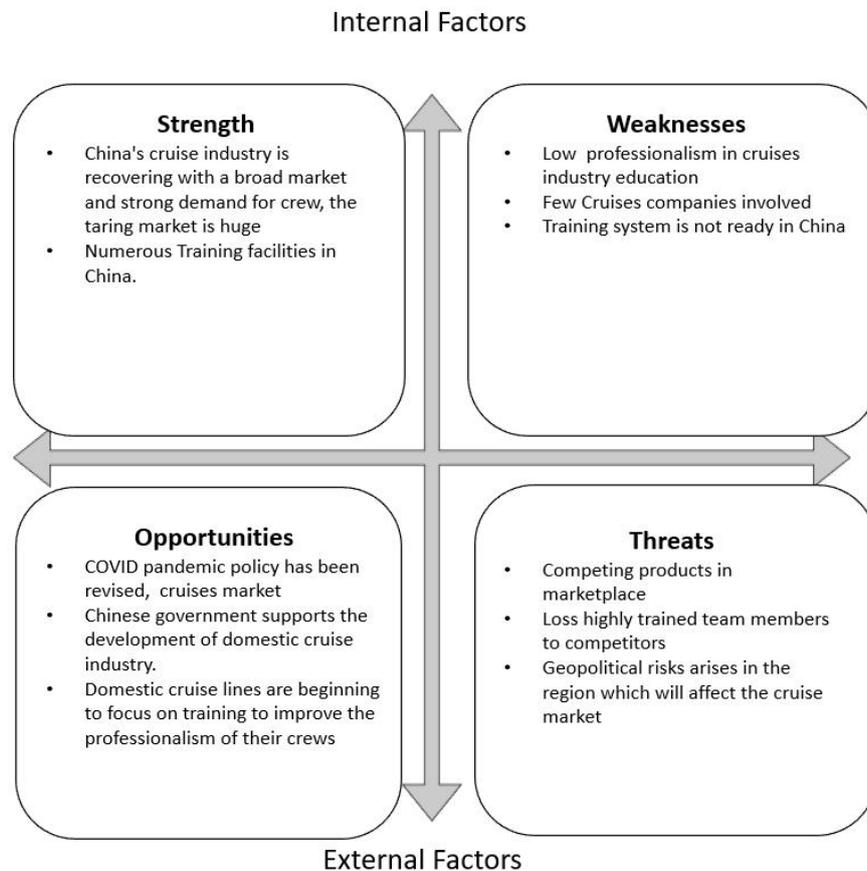
5) Recommendations for decision-making

Learn how to develop an SMS that covers all operations on board from international cruise lines or professional consultants, and hire people who have experience working in the cruise industry to develop a detailed SMS covering aspects such as developing a comprehensive risk assessment plan, implementing a Hazard Communication Program, ensuring proper emergency response procedures, and so on.

4.2 SWOT analysis for Training development for China cruises industry

Figure 9

SWOT analysis for training development



Note: Done by Author

1) Strength analysis

As a result of the robust recovery of the Chinese economy following the revision of the COVID pandemic policy, the cruise market in China will experience a robust recovery. As a result, both international and domestic cruise companies will dispatch cruise ships in China, which will lead to an increase in the demand for crew, and that in turn will lead to an increase in the requirements for training.

There are over 139 training centers in China which are capable of providing hotel crew training, and over 50 training centers are capable of providing marine crew training. The majority of these training centers are located in the middle of the east coast of China (Ye et al., 2022).

2) Weakness analysis

There is a lack of professional teaching resources, the quality of teachers is modest,

coastal colleges and universities do not make full use of their advantages, the number of students majoring in cruise ship-related fields in China is low, the opening of cruise ship-related majors in China is relatively late, the preparation of teaching materials, curriculum knowledge, and practical training basis does not improve, and there is a significant gap between the actual job requirements and the majority of the institutions that are involved in the cruise ship profession.

There is a lack of contact between the schools, the cruise ships, and the intermediaries. When it comes to the cultivation of cruise talents, cruise companies are the final employers, and schools are the sources that can deliver a large number of talents. However, intermediaries serve as a bridge between cruise companies and schools, and the three fail to communicate effectively, which results in a shortage of talents and varying quality of talents, which not only cannot meet the demand of the Chinese cruise market, but also leads to the waste of cruise talents.

3) Opportunities analysis

According to a report that was published by Xinhua News Agency on August 18, 2022, China is planning to expedite the development of cruise and yacht equipment as well as the relevant sector in order to strengthen the expansion of the nation's maritime economy and modern service industry.

Domestic cruise lines are beginning to place a greater emphasis on training in order to improve the professionalism of their crews. Ever since domestic cruise lines began operating their own cruise ships, they have come to the realization that training is the key to success, and that a safety culture can only be established via training.

4) Threats analysis

As the cruise market continues to recover, cruise giants will also return to the Asian market. Local cruise ships will face increased competition in the market. The market demand for cruise ship crew competition will rise. The crew has been trained, and it is likely that they will jump ship to other companies because of the treatment of the problem.

In addition, geopolitics exerts a significant amount of influence over the Asian cruise

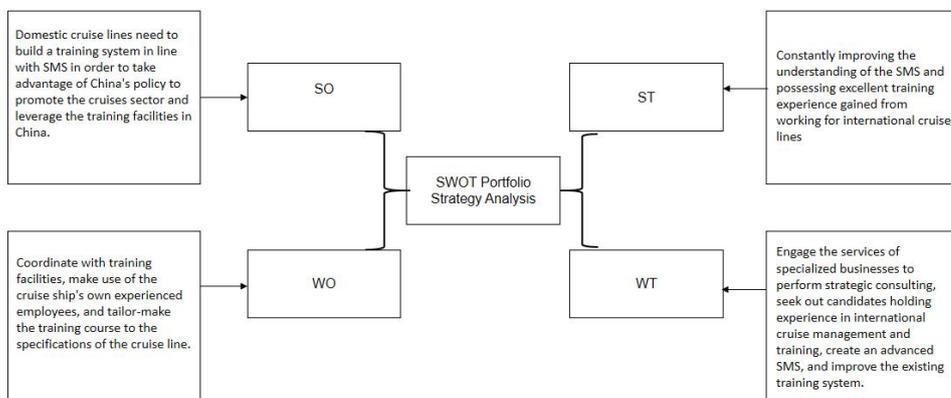
market. This, in turn, has a certain degree of impact on the growth of the cruise market, which, in turn, has an impact on the demand for cruise talent and training.

4.2.1 SWOT Portfolio Strategy Analysis

In light of the challenges and obstacles that will be presented by the establishment of the training system, it will be necessary to give full play to its own strengths and opportunities, capitalize on opportunities, give full play to Strength, steer clear of challenges, and find ways to overcome obstacles in order to come up with appropriate solutions for the development of a training system that will be appropriate for the growth of the Chinese cruise industry. In addition, it will be necessary to carry out a SWOT strategy combination analysis in order to be able to carry out these solutions.

Figure 10

SWOT portfolio strategy analysis



Note: Done by Author

1) SO strategy analysis (Strength-Opportunities)

The examination of the SO strategy should mix the organization's internal strengths with the opportunities presented by the outside world.

Since the COVID policy in China has been revised as of the end of 2022, the cruises

industry in China anticipates a recovery, and related Chinese government divisions are actively making preparations for the reopening, so this is a good chance for the cruise industry in China. The author has also conducted interviews with a large number of training facilities in China, and they have stated that they have already prepared and are expanding enrollment of new students for cruise lines. Therefore, domestic cruise lines need to refine the SMS, build up their own training system, coordinate with the training center in China, and train more professional employees to work on their respective fleets.

2) WO strategy analysis (Weakness- Opportunities)

WO analysis is making use of external opportunities to compensate for internal weaknesses in order to produce a situation in which both parties' benefit. They can coordinate with training facilities to develop the training course. On the other hand, they can also bring the training facilities teacher onboard to get cruise ship experience. In this case, training facilities and cruise company can create win-win situations. Domestic cruise lines have already hired their own experienced crew and shore staff.

3) ST strategy analysis (Strength-Threat)

ST analysis is the utilization of one's own strengths, with the goal of avoiding or minimizing risks posed by external circumstances.

The international cruise industry is concentrating its efforts on the China market because it is enormous and is expected to experience steady expansion following China's economic recovery from the COVID crisis. International cruise lines often contract with independent third parties (training centers) to provide crew training. For example, Royal Caribbean International Line is cooperating with Simwave training center in the Netherlands to provide marine training for their marine officers. This is because international cruise lines are more developed than domestic cruise lines. Domestic cruise lines should learn from international cruise lines' SMS and training system. The training modality in question ought to be mastered by all domestic cruise lines.

4) WT strategy analysis (Weakness-Threat)

The goal of WT analysis is to lower the risks on the inside side while avoiding danger on the outside.

Establishing a comprehensive SMS and further honing the training system should be priorities for domestic cruise lines, as should the recruitment of professionals with expertise in international cruise management and training. Employ specialized businesses to provide strategic consultation, continue to keep an eye on the geopolitical scenario, and ensure that a backup plan is always ready in the event that something unexpected occurs.

Conclusion for SWOT strategy analysis

In the beginning of the development of local cruise lines, priority is given to WT strategy, hiring professional companies to do strategic consulting, recruiting professional cruise talents to establish an SMS suitable for the development of Chinese cruise ships, and refining training system. This can be deduced from an analysis of the SO, WO, ST, and WT strategies. When this occurs, domestic cruise companies have the opportunity to adopt WO and ST strategies, as well as cooperate with MSA and training facilities, in order to develop a talent training base for China's cruise industry.

Chapter 5. The measures to improve the SMS for China domestic cruise company.

Domestic cruises company SMS need to be improved from multi-dimensional integration, for example, to build up China cruise safety act to guide the cruise company SMS, to hire the consulting company and cruise talents to refine SMS, to refined the training section of the SMS, cooperate with training facilities, maritime university and college to develop the training for cruise ship crew, etc., and so on.

5.1 Strengthen China's Maritime Safety Act for Cruise Ships

China's legislative body, legislative procedures, legislative talent, and legislative form are highly comprehensive; China's cruise operation safety and security legislation is technically and procedurally feasible; There are conditions that make it

possible for China to pass cruise operation safety and security legislation. The "Opinions on Promoting the Development of China's Cruise Ship Economy" which were issued by the Ministry of Transport and ten other departments, put forward "strengthening the safe development of cruise ships and focusing on promoting the construction of safety management systems," which has pointed out the direction for the cruise operation safety and security legislation (The State council of the People's Republic of China. 2018).

There are objects to learn from, such as the background of foreign cruise safety legislation, the legislative process, the legal content, and the implementation effect. For instance, the Cruise Vessel Security and Safety Act (CVSSA) of 2010 prescribes security and safety requirements for the majority of cruise ships that embark and disembark in the United States. This act was passed in order to protect passengers on cruise ships that visit the United States (Cruise Vessel Security and Safety Act CVSSA. (n.d.). MARAD).

To clarify the safety responsibilities of cruise operation management. Provides for the safety and security requirements and guidance of domestic cruise lines, and proposes to divide the cruise operation safety and security legislation into 3 steps: Develop the local regulations for cruise line safety and security operations. Given that the local rules are rather flexible and require a short amount of time for the legislative process, this can help satisfy the cruise line's safe operation legislation demands in a timely manner. The Shanghai Cruise Tourism Operation Code is an investigation of cruise operation safety legislation at the local level (Shanghai Municipal Administration of Culture and Tourism. 2018). It is a prudent move to transition before the high-level law on cruise operation safety in China and serves as an example of how cruise operation safety legislation can be explored at the local level. The legal efficiency of the Shanghai Cruise Tourism Operation Code in resolving cruise operation safety disputes is far too low from the standpoint of judicial practice; thus, it is required to further enhance the degree of cruise operation safety protection law.

It is recommended that precise provisions on the safety responsibilities of all parties participating in cruise ship operations be drafted and included in both the Maritime Law and the Tourism Law. The safe operation portion of the Shanghai Cruise Tourism Operation Code will be brought up to the legal level if the fundamental principles of safety and security for cruise line operation are further added to the Maritime Law.

The Cruise Vessel Security and Safety Act (CVSSA) was passed in 2010, and it mandates that cruise lines be open and forthcoming when it comes to the recording and reporting of crimes. Additionally, it mandates that cruise ships have rules and processes in place, as well as that measures be put in place to prevent and respond to assaults that are perpetrated on board. The Act requires that the Federal Bureau of Investigation be notified if illegal behavior is reported. Please refer to the table below for information regarding the suspected criminal activity that has occurred onboard cruise vessels operating in the ports of the United States in the most recent five years.

Table 3

Alleged criminal activity occurring on board cruise vessels

ALLEGED CRIMINAL ACTIVITY OCCURRING ON BOARD CRUISE VESSELS							
	Homicide	Death(suspicious)	Kidnapping	Assault with serious bodily injury	Firing or tampering with vessel	Theft >\$10,000	Sexual assault
2018	0	5	0	6	0	22	82
2019	0	1	0	7	2	15	101
2020	0	0	0	0	0	0	22
2021	0	1	0	1	0	0	11
2022	0	1	0	7	0	5	87

Adapted from Cruise Line Incident Reports. (2023, March 20). US Department of Transportation. <https://www.transportation.gov/mission/safety/cruise-line-incident-reports>. Copyright 2023 by US Department of Transportation.

It serves as an excellent model for national governments, and given the increasing number of cruise ships operating in the China market, the Chinese government

ought to enact a law analogous to this one in order to direct the cruise industry. The information service on cruise operation safety is something that can be tried out initially because there is a certain amount of lag in the implementation of relevant laws and regulations. Particularly in the realm of national security and the personal safety of people, which can first and foremost rely on administrative agencies at all levels to strengthen the management and servicing of cruise information and set precise regulations on the disclosure of cruise operation information. Because of the lack of experience in this particular section, it is advised that legislation be included in the department rules in order to lessen resistance. For the purpose of assisting cruise ships in delivering complete information, it is recommended that relevant ministries take the lead in establishing, on a trial basis, a comprehensive data platform specifically designed for cruise ships. It's possible that the Ministry of Transport and the National Bureau of Statistics would make the best leads for the construction of such platforms, but there are plenty of other potential candidates. The establishment of cruise ship operation safety legislation not only provides cruise lines with clear instructions in law, cruise lines develop relevant chapters in SMS to promote safety to facilitate the safe operation of China's cruise ships, but it also contributes to the healthy development of China's cruise industry chain. Cruise lines develop relevant chapters in SMS under the guidance of the law to promote safety to facilitate the safe operation of China's cruise ships.

5.2 Refine SMS by all the operations

It needs commitment and leadership at all levels, a clear safety vision, values, and procedures that are shared among stakeholders in order for domestic cruise lines to be guided by clear regulations, laws, and act. Learn from the experiences of foreign cruise lines, investigate the mishaps and events that have occurred on other cruise lines, analyze communication channels for risk awareness and the transmission of safety information, and maintain control over the migration of systems to higher risk levels. In addition, SMS should emphasize continuous learning and improvement in addition to an emphasis on education, training, and competence development. These two sections are well associated with crew and passenger's personal interests, and these two parts are also the weak link in domestic cruise line,

therefore domestic firm should also pay great attention to the security and medical part in the SMS

5.2.1 Security manual in the SMS

For the normal operations, the SMS needs to refine the security operations onboard. It is suggested to develop own security manual, which is intended to outline procedures and guidance in reducing risks to guests, shipboard employees, authorized Visitors, and the vessel due to threats to security from external or internal sources. The SSP onboard can only cover the needs of the ISPS codes. It is advised that the manual consist of two sections: the "SMS," which outlines everyday operations and is made available to all personnel, and the "vessel section," which is known as the Ship Security Plan (SSP). Both parts are available to read. The Security Manual should contain protocols and instructions on day-to-day security processes. In addition, it should address some anti-narcotics and counter-terrorism measures. Below chapters may be considered to be included in security manual.

- Shipping company organization, shipboard organization
- The procedures for recruiting and promotion for security staff
- Threat level and incident response plan
- Physical security which related to access control system, prohibited items, visitor access control.
- Crime prevention & strategy
- Internal security and key systems which related to the requirements, restricted areas, CCTV equipment and access control, etc.
- Personal security which related to the concern of personal security, protection of valuables, unsolicited telephone calls, lost and found, isolation of offenders, dismissal crew members, master hearing procedures.
- Responses to reports of allegations of crimes, reports of missing persons, and serious guest conduct policy violations

Each of the chapters needs to include extensive amounts of information, and several of the tasks need to make use of standardized operating procedures in order

to get everything set up properly for each ship, much like the policy does for the overall fleet operation.

In terms of the logistics, the Security team should be on duty throughout the entire 24 hours of the ship's operation, whether it be in port or at sea. Access control, security patrols, the protection of property, the reporting of security issues, including sexual assault, and ensuring the well-being of shipboard personnel and passengers are also part of the security officer's responsibilities. The functions and responsibilities associated with each job in the security operation need to be clearly stated in the SMS.

The Master

The Master is the onboard authority, solely responsible for the overall security and well-being of the guests, shipboard employees, visitors and vessel. The master may take any steps or issue any orders, whether or not they are in accordance with the Ship Security Plan or the Security Manual, if such orders are necessary for the preservation of life or the safety of the vessel. The Master may also request the assistance of Marine Operations at any time for this purpose, as may be necessary.

The Staff Captain

The Staff Captain is responsible to the Master for all aspects of shipboard security and for the implementation and effectiveness of the Ship Security Plan and other corporate security policies. The Staff Captain is designated the Ship Security Officer. The Staff Captain's duties and responsibilities, under this requirement, can be found in the Ship Security Plan.

The Chief Security Officer

The Chief Security Officer reports to the Staff Captain and fulfills those instructions and duties as delegated by the Staff Captain. The Chief Security Officer is responsible for the daily operation of gangway security processes. The Chief Security Officer must ensure the correct implementation and operation of the ship's gangway screening procedures.

The Security Staff

The vessel's guard Force consists of both male and female Security Staff. The Security Staff reports to the Chief Security Officer and fulfill the required duties to ensure the vessel maintains a high standard of physical and personal security. The Security Staff is the ship's first line of defense when dealing with Guest or Shipboard Employee security concerns

The Shipboard Employees

Every Shipboard Employee plays an important role in the security organization and is expected to participate in all security processes which enhance the security of the vessel.

Special attention should be paid for CCTV system as it's the key to preserve the evidence in case of any accidents or incidents, it's also related to passenger, crew privacy and safe operation of the ship, live viewing of footage in sensitive area onboard ship, for example the child/Youth facilities, financial area should only be admitted from the master.

Response to reports of allegations of crimes, reports of missing persons, and serious guest conduct policy violations is another important chapter which need to be detailed, this part is designed to guide both cruise company and onboard security personnel in responding to a security incident. Law, regulation and/or policy are required to be referred in order to have a clear guidance in the SMS. Incident response efforts are not to focus on proving or disproving a crime allegation's validity, but instead, they are to focus on:

- Providing for the safety and security of the ship and those aboard;
- Providing for the victim's medical care;
- Preserving (versus collecting) evidence;
- Cooperating with government incident response; and
- Developing lessons-learned to aid in future incident prevention/response

Before it can be implemented in China, the domestic cruise company needs to think loud, learn from the cruise well developed countries and international cruise line,

refine the SMS, and build up the security manual in the SMS. The security manual is essential to give a clear guidance for onboard staff to carry out the operations and reduce the risks. In addition, laws, regulations, and/or policy are required.

5.2.2 Seek assistance from the health authority in developing a medical manual for use on board as part of the safety management system.

The expectations for the management of the shipboard medical centers are represented in the Medical Manual, which is contained inside the SMS. The Medical Safety Management System (MSMS) offers a means by which appropriate and consistent policies can be implemented for the operation of shipboard medical centers. The medical safety management system is mandatory for all of the cruise firms' individual lines of business. Each chapter or policy should be broken down into three distinct sections labeled "Policy," "Guidance," and "Monitoring," respectively.

There is no such thing as a written guidebook that could potentially cover every possible outcome or circumstance. If there are any policies within the manual that are in conflict with established medical management, accepted medical community standards or clinical practice, or if the treating physician believes that applying said policies would not be in the patient's best interests, then the physician's clinical judgment may take precedence over the SMS policy.

The shipboard medical facility and accommodations should be used exclusively for medical and medically related purposes, and the sanitary facilities, where provided, in the medical facility will be used exclusively by the occupants of the medical facility. The manual should include below chapters:

- Medical center operation guidelines which give a guidance of medical opening hours, call procedures, medical records system, handover and medications/supplies ordering procedures.
- Secondary medical spaces/contingency medical plan including the supplies for secondary medical spaces, procedures to set up the secondary medical space during an incident. Procedures of oxygen using onboard.
- Clinical equipment routine and preventative maintenance which covers the

procedures for medical equipment maintenance and scheduled preventative maintenance.

- Crew and guest medical management, this chapter give general information of clinical documentation, medical conditions and medical disembarkations.
- Procedures for onboard incident, accident and evidence preserve which is providing medical care to a guest or crew member, who has sustained an onboard injury (Safety Incident) or was the victim of an alleged crime or overboard situation (Security Incident), will require careful attention and documentation, and depending on the circumstances, the proper preservation of evidence.
- Management of a Sexual Assault allegation which is providing the procedures for response protocols, consent for examination, photographic documentation of injuries, confidentiality, collection of forensic evidence from a suspect.
- General medical procedures including mental health incidents, needle stick protocol, Prevention of common cruise ship diseases.
- Medical evacuations and guidance on escalation of abnormal situations during a medical evacuation. This guide provides recommendations for the evacuation of Guests or Crew members due to medical conditions.

5.3 Refine the training system

Everyone involved in the safety management structure, not only the lower-level controllers of the physical system, is required to have an understanding of their duties and responsibilities in relation to safety, as well as the reasons behind why the system as a whole (including the organizational components of the SMS) is structured in the manner that it is. It is more probable that employees will comply with the SMS's intended purpose if they understand and are dedicated to the SMS's purpose. Otherwise, employees are more likely to just follow the rules when it is convenient for them to do so. The "why" component of training is just as important as the "what" component. Complacency, seemingly irresponsible behavior (but behavior that is completely reasonable for the person), and unanticipated developments that lead to danger can be helped by gaining an understanding of the

rationale behind the safety standards that they are required to obey (Leveson, N. 2020).

Reasons include having an awareness of the factors that led to incidents that have occurred in the past and the adjustments that may be made to try to stop them from happening again. And training should be refined in the SMS for cruise ships because there are so many operations onboard. Each operation generally needs to be trained for all crew members onboard to make sure they understand the reasoning behind the safety rules they need to follow. This will help reduce complacency, seemingly reckless behavior (but behavior that is perfectly reasonable for the individual), and unexpected changes that lead to danger. Standard operating procedures can be used to characterize a non-detailed portion of the SMS. SOPs provide detailed guidance on routine and repetitive operations. These duties may include maintenance procedures, tool setup instructions, and machine operating instructions. SOPs are also beneficial for defining the "who" and "how" for standing procedures such as building evacuation, emergency actions for medical emergencies, fire, etc... (Paoletta, D. 2021).

Employee training from identification and delivery to tracking is an integral part of the SMS. As the SMS continues to develop, it is important to remain abreast of the requirements and standards for training delivered to employees both shoreside and shipboard. The catalog needs to be developed in the SMS, the purpose is to

- Identify training courses for all shipboard positions that are given on the ship or in shoreside training facilities.
- Identify the training requirements for each shipboard position.
- Define the training codes used in the Training Tracking System.
- Provide an overview of each training course.
- Provide information on how to register for the training.
- Furnish instructions for updating the Training Tracking System.
- Refer to the domestic airport security system, develop cruise ship security training for onboard security staff

5.3.1 Training Curriculum

The training curriculum should take into account not only the compliance training that is required by rules such as SOLAS, STCW, MARPOL, and so on, but also the requirement from the cruise company, CLIA, public health authority, and so on.

Generally speaking, the training course should be set as follows:

- Medical and Public Health
- Safety and security regulatory and flag approved training
- Watch officers and crew training
- Safety and security training required by company
- Environmental training
- Technical training
- Human resource training

The training system in the SMS is rarely perfect from the beginning, and the cruise industry is developing very quickly; therefore, it is important to design an efficient process that can be put into place to ensure that domestic cruise companies are continually learning from accidents and incidents and improving not only the training system itself but also the workplaces, the products, and the service.

Incorporating with the maritime administration as well as a maritime university or college in order to facilitate a training course for the domestic cruise line is yet another efficient method for developing the training system.

The training system in the SMS needs to be refined, and the SMS needs to be made easy to follow. The contents of the course, the authorities, the sponsor, attendance, course length, course outline, trainer requirement, and other such information all need to be mentioned clearly in the SMS.

Purchase or design own training tracking system, which will be utilized to facilitate the collection of training data, as well as simplify the gathering of training data for all members of the crew. According to the standards and the policies of the company, the information that is stored in this system must be accurate and comprehensive for

each member of the crew that is aboard the ship.

Chapter 6 The conclusion

Any successful cruise line operation must have a safety management system (SMS) that has been carefully crafted and put into action. It not only promotes a culture of safety and accountability among all crew members and passengers, but it also offers a framework for the management of risks and the response to emergencies. The active recovery of the international cruise industry is a response to China's initiative to dovetail with high-standard international economic trade rules and further expand its openness. This initiative is conducive to the continued business of major international cruise lines in China. China is the world's second largest cruise passenger market. The domestic cruise industry chain in China is also continuing to expand. CMVKING's cruise ship "ZHAOSHNGYIDUN" has been operating in China for the past three years, and it is scheduled to begin offering international cruises in the middle of 2023. Additionally, the first Chinese-built cruise ship is scheduled to be delivered at the end of 2023. At this same moment, there is an excellent opportunity to improve the SMS for the domestic cruise company in order to ensure the safe, healthy, and ecologically responsible running of the business.

The article begins by providing an overview of the context, the significance of the research, and the current state of research both in the United States and elsewhere. It then proceeds to define SMS and discuss the fundamental ideas associated with it. The paper sheds light on the present state of SMS in China through a gap analysis and a case study. After that, it identifies the risks by using FSA and SWOT analysis methods, analyzes the hazards and proposes remedies based on them, and lastly, it gives proposals to build a Chinese cruise law and improve SMS, particularly in the areas of security, medical care, and training.

The domestic cruise company must also develop a strategic action plan. Establish a scientific and differentiated positioning, as well as clear strategic objectives for future and immediate strategic initiatives, based on a solid understanding of the opportunities and challenges posed by the external environment and our own

strengths and limitations. Develop a strategic plan for the growth of the company. Concentrate on attaining goals, satisfying customer requirements, and establishing an effective safety management system. Maintain a confident and strategic posture. Maintain self-assurance during a short-term market downturn, cultivate strategic resolve based on a strategic road map, train assiduously, and forge ahead. By collaborating with international cruise lines and recruiting talent with experience managing international cruise lines, domestic cruise lines develop an effective mechanism to perpetually improve the SMS, with a particular focus on the security, medical care, and training components. These measures are required to assure passenger safety.

Increase the collaboration between maritime training institutions, tourist training institutions, maritime colleges and universities, and other training institutions in order to develop training programs for cruise ship crews. Establish a robust and sustainable long-term structure for the training of individuals at all levels to train, reserve, and accumulate talent for the growth of the cruise industry.

As China's economy continues to expand, the domestic high-end travel sector will also increase swiftly along with the improvement of people's living conditions. As a result, the development of Chinese cruise ships has a wide range of potential applications and applications.

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