



The Current Situation and Critical Cultivating Measures of High-End Maritime Talents in Shanghai International Shipping Centre

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Abstract: High-end shipping talents are an important guarantee for the establishment of Shanghai International Shipping Centre, and high-end maritime talents are an important source of high-end shipping talents. This article firstly classifies the shipping talents needed for the establishment of Shanghai International Shipping Centre into 12 categories according to the function and industrial support of International Shipping Centre, defines those who have obtained the certificate of competency for the master or chief engineer of international seagoing vessels as high-end maritime talents. Then, the article investigates and analyses the current situation of the high-end maritime talents of Shanghai in terms of quantity, shortage extent, human resources channels, company types of employment, salary, ship-to- shore career transition and improving mode, points out that there are problems including shortage in quantity, narrow human resources channels, unbalanced employment position selection, large gap of salary between ship and shore, and limited ship-to- shore career transition and ability improving mode exists as of the high-end maritime talents of Shanghai. Finally, in response to these problems, a total of six critical initiatives are proposed, which include formulating development strategy of talents, strengthening career development publicity of maritime talents, setting up talents cultivating fund, establishing Shanghai Crew Recruitment Centre, founding talents cultivation and transition base, and building talents supply and demand information database and exchange platform.

Keywords: Shanghai International Shipping Centre, High-End Maritime Talents, Problems, Cultivating, Critical Measures

1. Introduction

China has overtaken Japan as the world's second largest economy by nominal GDP in 2010 and surpassed the US as the world's biggest trader in goods in 2013. Presently, China is the world's second largest importer and largest exporter of goods [1]. The soar of import and export of goods has brought about a rapid development of shipping industry, according to the statistics from Ship-hub, by the end of 2022, seven of the world's top 10 ports were located in China, and Shanghai Port has been the world's largest port for 13 consecutive years [2].

The fast development of ports and shipping industry in China has led to a trend of moving eastward of the International Shipping Centre. Since 2014, the China

Economic Information Service of Xinhua News Agency and the Baltic Exchange have jointly launched the "Xinhua-Baltic International Shipping Centre Development Index" globally for the first time, and selected the world's top 10 International Shipping Centre based on this index, of which Shanghai was one [3]. According to the latest "Xinhua-Baltic International Shipping Centre Development Index Report" released in July 2022, Shanghai ranked third with a total score of 82.79, narrowing the gap with London International Shipping Centre, but there was still a certain distance from Singapore, which has ranked first for 9 consecutive years (score 94.88) [4].

In order to further improve the level of Shanghai International Shipping Centre, the Shanghai Municipal People's Government issued the "Fourteenth Five-Year Plan

for the Building of Shanghai International Shipping Centre" in June 2021, proposing to basically build a world-class International Shipping Centre with convenient and efficient, completely functional, open and integrated, green and intelligent, and strong security by 2025 [5].

The key to achieve this goal is to develop talents, especially high-end shipping talents. As an important part of shipping talents, the high-end maritime talents are strategically valuable for complementing the weaknesses of high-end shipping talents in Shanghai. Therefore, it is necessary to clarify the scope of the high-end maritime talents, to grasp its current situation, to analyse the problems faced by high-end maritime talents in Shanghai, and propose targeted measures to provide decision-making support for the cultivation of high-end maritime talents in Shanghai International Shipping Centre.

2. The Scope of High-End Maritime Talents

2.1. Classification of Shipping Talents

Taking the international maritime transportation of cargo as the main line, the shipping talents needed for the establishment of International Shipping Centre are divided into 12 categories according to the function and industrial support of International Shipping Centre [6-9].

- 1) Talents of international maritime transportation of cargo.
- 2) Talents of rescue of life and property at sea.
- 3) Talents of ship design, construction, inspection, maintenance and dismantlement.
- 4) Talents of port and wharf.
- 5) Talents of shipping brokerage.
- 6) Talents of shipping finance.
- 7) Talents of shipping insurance.
- 8) Talents of shipping law.
- 9) Talents in maritime education and training.
- 10) Talents of shipping consulting and research.
- 11) Talents of shipping supervision and management.
- 12) Talents of shipping information and technology.

2.2. Definition of High-End Maritime Talents

The International Shipping Centre is not only the distribution center of international goods, but also the center of modern shipping service industry. It is also the maker of international shipping practices, commercial practices and rules. It has the right to resolve international business disputes, as well as the allocation and integration of global shipping resources such as ships, goods, shipping funds, maritime cases, shipping services, and high-end shipping talents [10].

From the developing experiences of shipping industry in Singapore, London, Hong Kong and other cities or regions, the development of International Shipping Centre is based on the core business of "international maritime cargo transport".

However, to truly possess the capability of allocating the global shipping resources, it is inseparable from the support of modern shipping service industry such as shipping management, brokerage, finance, insurance, law and consulting, the corresponding talents are high-end shipping talents [11, 12].

From the perspective of the development history of shipping industry and the talent application cases of the current leading International Shipping Centre, it has high requirements for the professionalism and experience of high-end shipping talents which can only be obtained through systematic study of shipping theory and long-term accumulation of shipping practice.

According to the classification of the function and level of responsibilities for seafarers in "International Conventions on Standards of Training, Certification and Watchkeeping for Seafarers, 1978" (STCW Convention) [13], and the career development route of seafarers on board ships, the promotion of ratings to master or chief engineer requires higher theoretical capability and rich practical qualifications at sea, which makes the master and chief engineer are not only navigational experts with excellent technical ability, but also management professionals with rich experiences, which has the inherent advantages of becoming a high-end navigation talent. As per the statics from the Lloyd's List, there are at least 300 navigational experts with good theory and rich practical experiences such as masters and chief engineers, have been trained in London every year to participate in the market of maritime derivative industries such as ship inspection, shipping brokerage, shipping finance, shipping insurance, shipping law, shipping consulting services [14], which makes the master and chief engineer have become an important source of high-end shipping talents in London International Shipping Centre.

Based on those mentioned above, the high-end maritime talents for building International Shipping Centre are defined as: the onshore working master or chief engineer who has obtained the certificate of competency for the master or chief engineer of international seagoing vessels, and has steady theoretical knowledge, practical skills, management experience in marine technology and marine engineering.

3. The Current Situation of High-End Maritime Talents of Shanghai

3.1. The Quantity of High-End Maritime Talents

According to the China's Crew Development Report of 2016-2020, the number of registered seafarers of international sea-going vessels has increased year by year, but the number of master and chief engineer holding the certificate of competency of international sea-going vessels did not change much each year with an average of about 32996, of which the masters was 16179, and the chief engineers was 16247, as shown in Table 1.

Table 1. The number of masters and chief engineers of international sea-going vessels of China (2016 - 2020).

Year	No. of registered seafarers of international sea-going vessels	No. of masters	No. of chief engineers	Percentage of masters and chief engineers
2016	497197	15684	14798	6.16%
2017	524498	16509	15844	6.17%
2018	545877	17048	16473	6.14%
2019	575823	17097	16826	5.89%
2020	592998	17256	17117	5.79%

Data sources: China's Crew Development Report (2016, 2017, 2018, 2019, 2020).

The number of registered seafarers of international sea-going vessels vary obviously in provinces, cities and regions due to differences in regional development, however, the promotion of seafarers will follow the same regulations on examination and certification of competence, which makes that the route, time and proportion of promotion from ratings

to master or chief engineer are roughly the same. Therefore, the number of masters and chief engineers in each province, city and region can be estimated by referring to their proportion of registered seafarers of the whole nation, then the number of masters and engineers whose birthplace are Shanghai is estimated to be around 1000, as shown in Table 2.

Table 2. The estimated number of masters and chief engineers of international sea-going vessels born in Shanghai.

Year	No. of registered seafarers of international sea-going vessels	Percentage of masters and chief engineers	Estimated number of masters and chief engineers
2016	15519	6.16%	956
2017	15586	6.17%	961
2018	14986	6.14%	920
2019	17529	5.89%	1032
2020	18051	5.79%	1045

Data sources: China's Crew Development Report (2016, 2017, 2018, 2019, 2020).

Among the masters and chief engineers of international sea-going vessels, those who continue to work on board ships have maritime service qualifications, and who work or seek opportunities ashore does not. Referring to the proportion of masters and engineers with maritime service qualifications of

the whole nation, it is estimated that among the masters and engineers of international sea-going vessels born in Shanghai, the average number of whom with maritime service qualifications is about 740, and 243 of those without maritime service qualifications, as shown in Table 3.

Table 3. The estimated number of masters and chief engineers of international sea-going vessels born in Shanghai referring to maritime service qualifications. (2016 - 2020).

Year	No. of masters and chief engineers	Percentage of those with qualifications	No. of those with qualifications	No. of those without qualifications
2016	956	70.1%	670	286
2017	961	74.9%	719	242
2018	920	76.3%	702	218
2019	1032	77.6%	801	231
2020	1045	77.5%	810	235
Average	983	75.3%	740	243

Data sources: China's Crew Development Report (2016, 2017, 2018, 2019, 2020).

Seafarers of international sea-going vessels normally work on board ships for 6-10 months each year as per the nature of their work, and the remaining time is on leave. Any one of them without seniority at sea during the whole year are most probably looking for work opportunities ashore by means of internal recruitment, acquaintance recommendation, online recruitment, etc., aiming to participating into regarding

shipping companies.

Based on this phenomenon, masters and chief engineers of international sea-going vessel without maritime service qualifications during the whole year have become the main source of high-end maritime talents, and the estimated number of high-end maritime talents born in Shanghai is as shown in Figure 1.

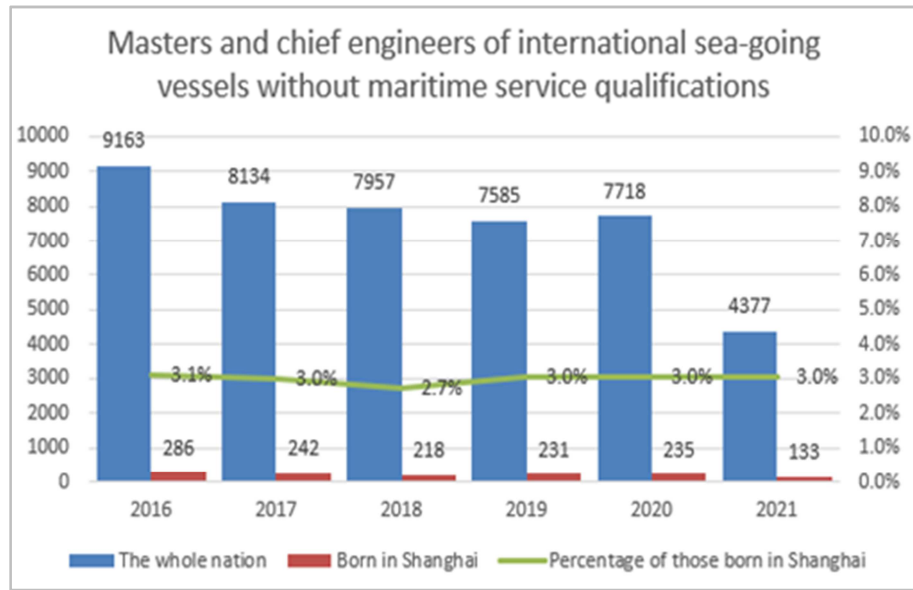


Figure 1. The estimated number of high-end maritime talents born in Shanghai referring to maritime service qualifications. (2016 - 2020).

3.2. The Current Situation of High-End Maritime Talents

In order to make a further understanding of the current situation of the high-end maritime talents in Shanghai, an investigation for the shipping companies, masters and chief engineers in Shanghai were conducted respectively to obtain the current situation of both the supplying and demanding side in terms of the shortage extent, human resources channels, company type of employment, salary, ship-to- shore career transition and improving mode, etc.

3.2.1. The Shortage Extent of High-End Maritime Talents

To set the ratio between supply and demand of the high-end maritime talents as x , and to classify the shortage extent of high-end maritime talents into four levels: extremely shortage, shortage, balance and surplus, as shown in Table 4.

Table 4. Classification of the shortage extent of high-end maritime talents in Shanghai.

Shortage extent	Value of x
Extremely shortage	$X < 0.5$
Shortage	$0.5 \leq x < 0.8$
Balance	$0.8 \leq x < 1.2$
Surplus	$x \geq 1.2$

Among the 45 shipping companies investigated, 18.9% of them were at the state of extremely shortage while 43.3% were shortage, those who remained balance accounted for 32.2%, and only 5.6% were surplus. In general, there were a shortage in both the masters and the chief engineers of international sailing sea-going vessels, only 1/3 of the companies have reached a balance situation, and few companies' demands were obviously less than supply, as shown in Table 5.

Table 5. The number of the shipping companies investigated in Shanghai in terms of shortage extent of high-end maritime talents.

Occupation	Extremely shortage	Shortage	Balance	Surplus
Masters	9	21	13	2
Chief engineers	8	18	16	3
Total	17	39	29	5
Proportion	18.9%	43.3%	32.2%	5.6%

3.2.2. The Human Resources Channels of High-End Maritime Talents

According to the investigation, the shipping companies mainly recruit high-end maritime talents by means of internal recruitment, talent market recruitment, online recruitment, headhunting recruitment, acquaintance recommendation, industry association, etc., among which the acquaintance recommendation are most frequently used followed by the internal recruitment, and the online recruitment ranked third, with the lowest proportion of

industry associations and headhunting recruitment. The proportion of different types of recruitment mode is as shown in Figure 2.

Correspondingly, some seafarers of international sea-going vessels will normally apply for a job ashore in shipping companies after being promoted to master or chief engineer due to the reason of age, family, personal career development, etc., aiming to gradually complete the ship-shore job transition and conversion. The proportion of job application mode for high-end maritime talents is as shown in Figure 3.

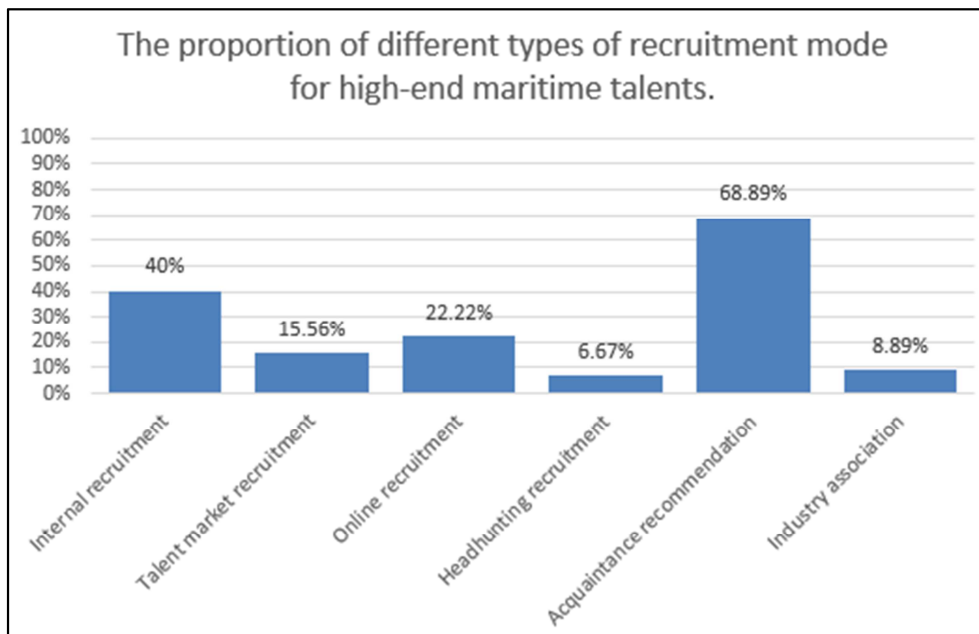


Figure 2. The proportion of different types of recruitment mode for high-end maritime talents.

Note: 1) Companies to be investigated can choose at most two types of recruitment modes; 2) The calculation method of the proportion of recruitment mode in the figure is the number of times the recruitment mode are selected/the number of companies investigated, so the total percentage is greater than 100%.

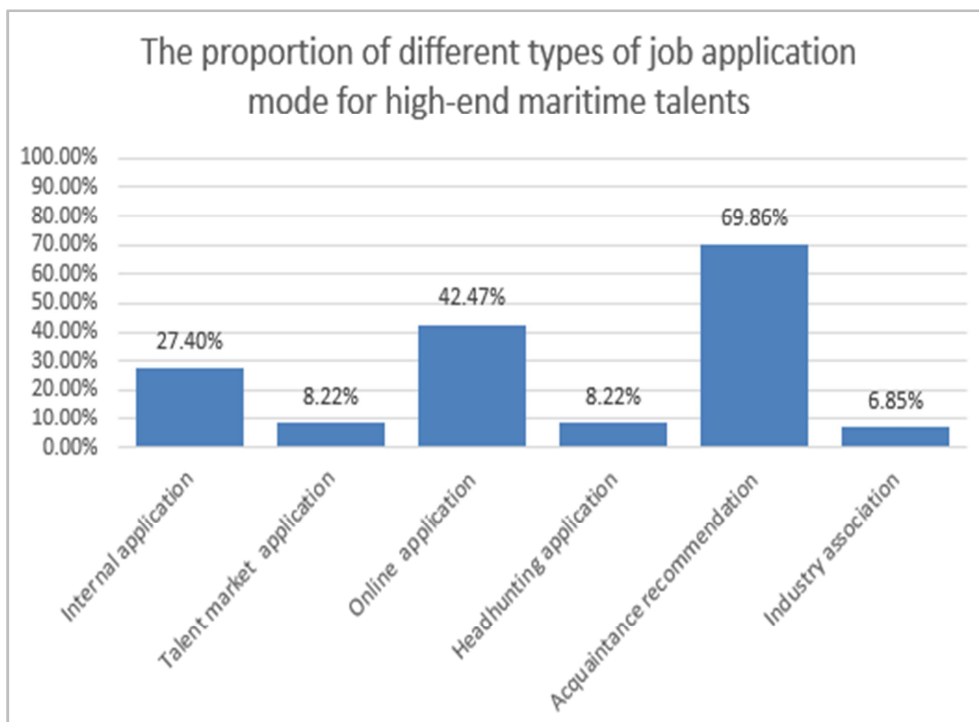


Figure 3. The proportion of job application mode for high-end maritime talents.

Note: 1) Seafarers to be investigated can choose at most two types of application modes; 2) The calculation method of the proportion of application mode in the figure is the number of times the application mode are selected/the number of seafarers investigated, so the total percentage is greater than 100%.

3.2.3. The Company Types of Employment of High-End Maritime Talents

The high-end maritime talents can be trained to participate in most of companies engaged in cargo transportation, ship construction and maintenance, shipping brokerage, maritime

education and training and other businesses in the shipping industry chain. As per the investigation, cargo transport companies are the most popular ones for high-end maritime talents followed by maritime education and training, shipping law and shipping insurance, the information technology

companies are the types with the lowest employment intention, as shown in Figure 4.

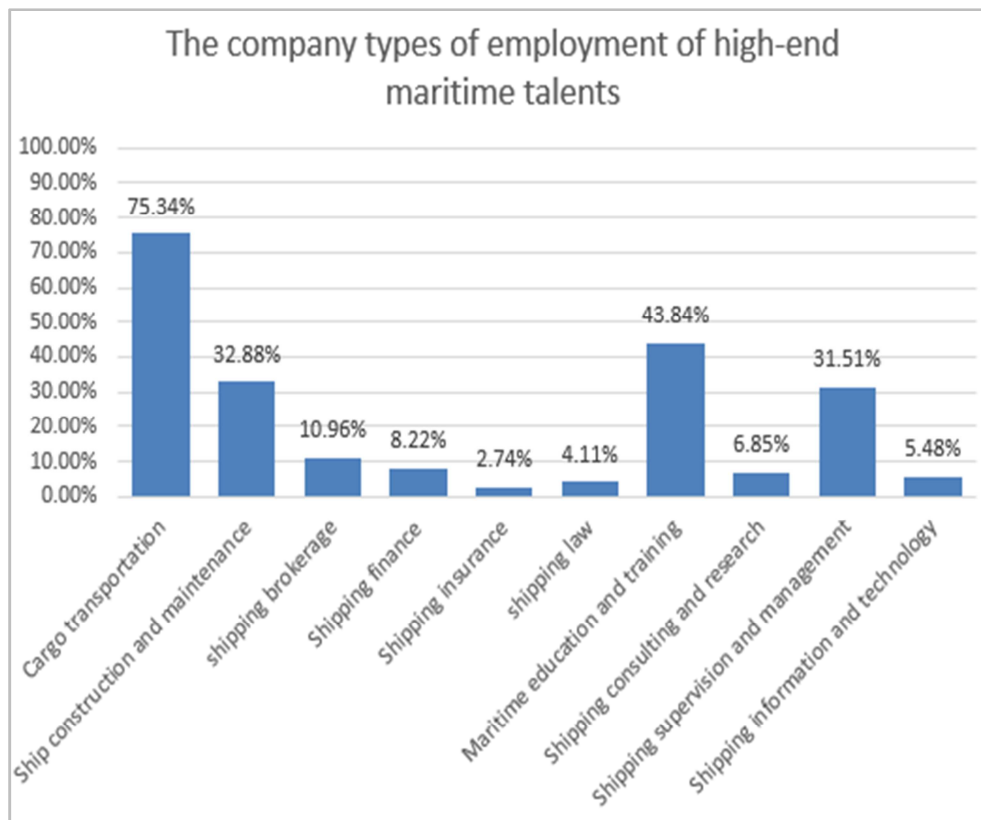


Figure 4. The company types of employment of high-end maritime talents.

Note: 1) Seafarers to be investigated can choose at most three types of company; 2) The calculation method of the proportion of company types of employment in the figure is the number of times the company type is selected/the number of seafarers investigated, so the total percentage is greater than 100%.

3.2.4. Salary of the High-End Maritime Talents

From the vision of employer, the salary that Shanghai's shipping companies are willing to provide to high-end maritime talents is mainly concentrated in the range of RMB 10000-50000 per month, of which RMB 20000-30000 per month accounts for the highest proportion, reaching up to 46.67%; The second is RMB 30000-50000 per month, accounting for 33.33%; Very few of them are less than RMB 10000 per month with a proportion of only 2.22%.

From the vision of the high-end maritime talents, the expected salary of those who are not currently employed in Shanghai are mainly concentrated in RMB 20000-30000 and 30000-50000 per month, accounting for 41.1% and 39.73% respectively; the expected ones of more than RMB 50000-100000 per month are less, and less than RMB 20000 per month are very few. However, the salaries of the high-end marine talents who are presently working in shipping industry in Shanghai are mainly concentrated in RMB 10000-20000 per month with a proportion of 44.19%, and the ratio of those whose salary level of RMB 0-10000, 20000-30000,

30000-50000 per month is roughly the same with a proportion of 15%, only a few has the salary of 50000 – 100000 and more than RMB 100000 per month.

3.2.5. The Ship-to- Shore Career Transition and Improving Mode of High-End Maritime Talents

In order to maximize the advantages of sea practice experiences of high-end maritime talents, shipping companies usually provide corresponding training of ship-to-shore career transition and improving, of which the common ways include traditional apprenticeship, internal training, external training, etc. According to the investigation, the main ship-to-shore career transition and improving mode provided by shipping companies in Shanghai is internal training with a proportion of 60%, followed by the traditional apprenticeship mode accounting for 33.33%; the external training and other ways altogether accounting for 6.67%, which is the least among several ways. The ship-to- shore career transition and improving mode of high-end maritime talents provided by shipping companies in Shanghai are as shown in Figure 5.

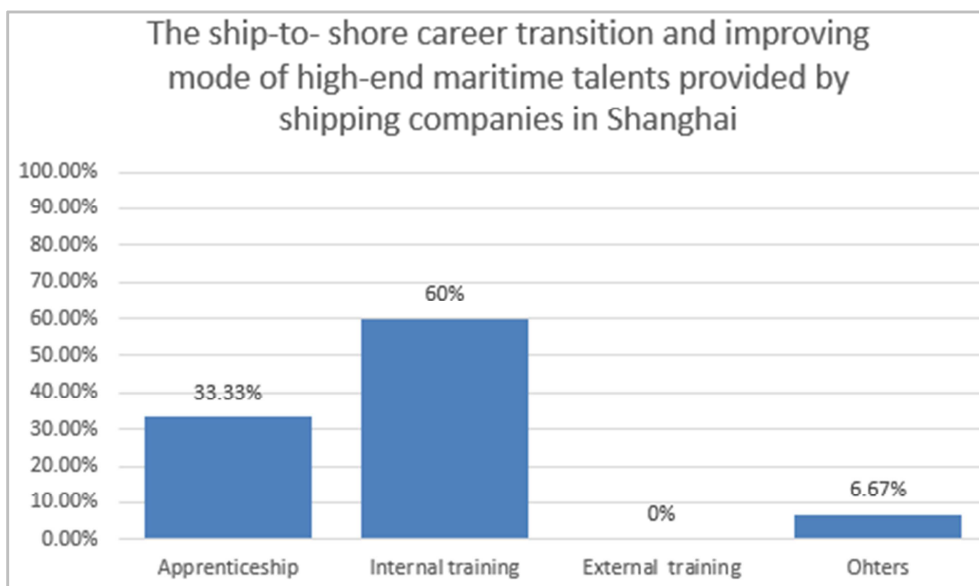


Figure 5. The ship-to- shore career transition and improving mode of high-end maritime talents provided by shipping companies in Shanghai.

Correspondingly, the most recognized mode of ship-to-shore career transition and improving mode for the high-end maritime talents is traditional apprenticeship mode with a proportion of 39.53%, followed by internal training with a proportion of 30.23%; the external training and other

methods are recognized by a total of about 30%. The ship-to-shore career transition and improving mode recognized by high-end maritime talents are as shown in Figure 6.

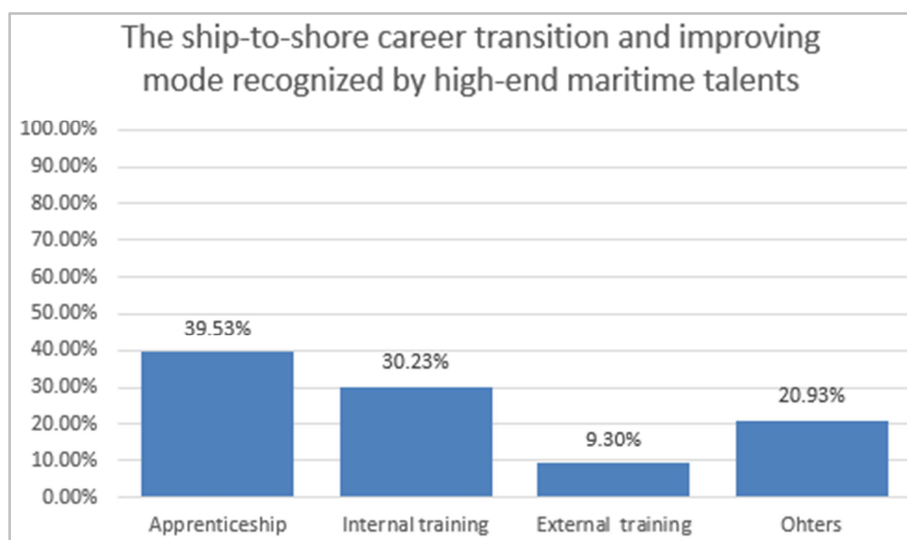


Figure 6. The ship-to-shore career transition and improving mode recognized by high-end maritime talents.

4. The Main Problems Faced by High-End Maritime Talents in Shanghai

4.1. The Shortage in Quantity of High-End Maritime Talents

The high-end maritime talents are transformed from masters or chief engineers of international sea-going vessels, the statics shows that the number of masters and chief

engineers of international sea-going vessels has increased slightly with a small increasing rate, and the proportion of the masters and engineers in registered seafarers of international sea-going vessels has decreased year by year. Form the perspectives of employer, about 62.2% of shipping companies in Shanghai are short of high-end maritime talents.

By the end of 2021, the cargo throughput of Shanghai Port reached 769.7 million tons, ranking second in the world [15]. By the end of 2022, the container throughput of Shanghai Port remained flat year one year in 2022 and exceeded 47.3 million TEUs, ranking first in the world for 13 consecutive years [16]; and However, in the year of 2016 – 2020, the average number

of masters and chief engineers of international sea-going vessels born in Shanghai and without maritime service qualifications in the very year was about 243, which was about 19.3% less than that of more than 300 masters and chief engineers trained to become high-end shipping talents in London every year. Considering the geographical advantages and development prospects of Shanghai Port in the world, the number of high-end maritime talents born in Shanghai is even more insufficient, and unable to meet the demand for high-end maritime talents in the building of Shanghai International Shipping Centre. The gap of high-end maritime talents can be made up only if the masters and chief engineers from other provinces, cities and regions across the whole country to be a supplement.

4.2. The Human Resources Channels Are Narrow for High-End Maritime Talents

The most important ways for Shanghai shipping companies to recruit high-end marine talents are acquaintance recommendation and internal recruitment, the proportion of which is twice and three times respectively that of online recruitment that ranking third. Although there is a slight difference in the proportion of job application mode of masters and chief engineers, acquaintance recommendation still ranks first with 70% and to be the most popular ways of job application.

In the context of shortage of shipping talents and mobile interconnection, such a high recommendation rate of acquaintances shows that the human resources channels of high-end maritime talents are relatively narrow both on the supplying and demanding side, which cannot meet the market-oriented demands of talents, leading to an obvious phenomenon of mismatch between supply and demand of the high-end maritime talents.

4.3. The Career Choice Direction of High-End Maritime Talents Is Too Concentrated

Compared with the high-end talents with no navigational background and maritime qualification in shipping service industry, the masters and chief engineers of international sea-going vessels have worked on board ships for a long time with fewer channels to obtain outside information, and have a low understanding of the onshore positions of shipping companies. During the process of ship-to-shore career transition, most of the masters and chief engineers mainly consider cargo transportation companies directly related to navigation, including ship companies, ship management companies, ship agents, freight forwarders, etc., as well as maritime education and training and maritime supervision and management units such as maritime colleges, maritime training institutions and maritime safety administration, etc. however, shipping service companies engaged in shipping brokerage, shipping finance, shipping insurance, shipping law, shipping consulting and information technology are rarely considered. This has led to the influx of high-end maritime talents into companies that are close to the

nature of their original maritime work, reduced the talent supply of modern shipping service companies that are also in short supply of talents, and led to a serious mismatch in the selection of high-end maritime talents' onshore employment positions.

4.4. The Salary Gap Between Ship and Shore Is Large

According to the China Crew's Remuneration Index issued by Shanghai Shipping Exchange, from January to December 2022, the average salary of master of international sea-going vessels in Shanghai was US\$ 10969 per month, and that of chief engineer was US\$ 10439 per month, equivalent to RMB 76783 per month and RMB 73073 per month, respectively, as shown in Table 6.

Table 6. The salary of masters and engineers of international sea-going vessels in Shanghai from January to December 2022.

Month	Salary of the master	Salary of the Chief engineer	Average
1	11125	10542	10834
2	11150	10559	10855
3	11152	10581	10867
4	11112	10543	10828
5	11071	10507	10789
6	10997	10409	10703
7	10870	10406	10638
8	10872	10406	10639
9	10845	10360	10603
10	10836	10343	10590
11	10793	10308	10551
12	10808	10302	10555
Average	10969	10439	10704

Data sources: <https://en.sse.net.cn/indices/ccri.jsp>.

However, the salaries that Shanghai shipping companies can provide for high-end maritime talents are mainly concentrated at the level of RMB 20000-30000 and RMB 30000-50000 per month, which is a large gap with the salaries on board; if the expected salary of high-end marine talents who are not employed in Shanghai and the real salary of those who are employed ashore in Shanghai shipping companies are to be considered, the gap would be more obvious. The gap of salary between ship and shore becomes one of the important factors affecting the ship-to-shore career transition.

4.5. The Ship-to-Shore Career Transition and Ability Improving Mode Are Limited

Whether from the perspective of shipping companies or the masters and chief engineers, the ship-to-shore career transition and ability improving mode for high-end maritime talents is dominated by the mode of traditional apprenticeship, the disadvantages of which would be more obvious for masters and chief engineer working on board international sea-going vessels for many years, making them unable to complete the ship-to-shore career transition and ability improving quickly and effectively. It will not only bring a large amount of time cost for both shipping companies and the high-end maritime talents, but also extend the cultivation cycle of the high-end

maritime talents.

5. The Critical Cultivating Measures of High-End Maritime Talents

Maritime cargo transportation is not only a commercial act to transport goods from place A to B and getting economic profits from it, but also a strategic support industry that serves national politics, economy and military and has a strong nature of national protection. Therefore, the masters and chief engineers of international sea-going vessels are one of the important strategic security forces of the country, and the quantity together with the quality directly determine the national strategic security. In view of the problems faced by high-end maritime talents in Shanghai International Shipping Centre, the following critical measures are proposed.

5.1. Formulating Developing Strategy of High-End Maritime Talents

Based on the dynamic tracking of the supply and demand of high-end maritime talents in Shanghai, the government should formulate developing strategy of high-end maritime talents by stages, levels, fields and priorities as per the needs of the building of Shanghai International Shipping Centre, and clarify the specific objectives and tasks from the aspects of specialty, quantity, certificates of qualification, etc. Universities, companies, associations and social training institutions are responsible for the specific implementation of the strategy.

5.2. Strengthening Career Development Publicity of High-End Maritime Talents

Shanghai Municipal Transportation Commission, Shanghai Municipal Education Commission, Shanghai International Shipping Centre Development and Promotion Organization can jointly set up a seafaring career publicity group and its corresponding funds to publicize the seafaring career at the school level and the social level respectively, aiming to solve the problems of declining attractiveness and low social status recognition of seafarers.

Maritime colleges and universities should regularly invite high-end maritime talents from different types of shipping companies in Shanghai who are engaged in different professions to share the seafaring career developing path and successful experience of themselves with the freshmen, and publicize the advantages of the seafaring career, so that the students can develop a sense of responsibility, mission and identity for seafaring career from the very beginning; provide guidance for senior students and graduates on seafaring career planning, so that they can formulate the developing goals and paths of seafaring career according to the situation of their own, and gradually complete the transition from students to graduates, navigational cadets, master and chief engineer, and finally high-end maritime talents, so that they can realize that master and chief engineer are not the end and ceiling of the seafaring career, but the new starting point in

shipping industry with incomparable advantages of other professions, so that more maritime students can join in the seafaring profession.

The government should produce seafaring career brochures and public welfare promotional videos, and release them through influential traditional media and We-media to comprehensively show the nature, characteristics, income and importance of the seafaring career to the society, aiming to uncover the mystery of the seafaring career, to eliminate the long-term negative views of the society on the seafaring career, to improve the social recognition of the seafaring career, and enable more people to participate in the seafaring career, to further consolidate the developing foundation of high-end maritime talents.

5.3 Setting up Cultivating Fund of High-End Maritime Talents

Since 2016, Shanghai has set up special funds for the building of International Shipping Centre, mainly used to adjust and optimize the shipping collection and distribution projects, to promote the sea-rail intermodal transport projects, as well as innovative projects of the modern shipping service industry. According to the statistics of the special fund allocation from 2016 to 2021 published on the website of the Shanghai Municipal People's Government, the proportion used for innovative projects in the modern shipping service industry was only 2.3%, and further inquiry reveals that almost none of this was allocated to the cultivation of talents of the International Shipping Centre.

Talents are the key to development, and high-end shipping talents are the core elements of the development of modern shipping service industry, which is the main industry of the International Shipping Centre [17, 18], the building of the Shanghai International Shipping Centre is inseparable from the participation and support of various types of shipping talents, including high-end maritime talents.

Shanghai Municipal Transportation Commission can raise the proportion of the special funds for the building of International Shipping Centre in the innovative projects of the modern shipping service industry, and set up a cultivation fund of high-end maritime talents, which is mainly used for the cultivating, introducing and rewarding of high-end maritime talents. Specifically, the fund can be used for funding maritime universities and colleges in Shanghai to conduct research on the cultivation mechanism of high-end maritime talents, for shipping companies to introduce high-end maritime talents in their key positions, and for the masters and chief engineers of international sea-going vessels to participate in the training program of high-end maritime talents to complete the ship-to-shore career transition as soon as possible. In addition, financial support and policy preference should be given to major developing projects of high-end maritime talents.

5.4 Establishing Shanghai Crew Recruitment Centre

According to the requirements of the Maritime Labour

Convention 2006, the governments of each contracting party should establish non-profit crew recruitment agencies to solve the problems of crew employment [19], China has fully implemented the contract since November 12, 2016, but no such organization has been set up so far. As the bridgehead of the building of the international shipping centre, Shanghai can set up the Shanghai Crew Recruitment Centre under the leadership of the Ministry of Transport, the Shanghai Municipal Human Resources and Social Security Bureau, the Shanghai Municipal Transportation Commission and other department to serve seafarers of the whole nation.

Through the services of the Crew Recruitment Centre, letting more maritime talents including the masters and chief engineers of international sea-going vessels to gather in Shanghai, forming a talent gathering and demonstration effect, and establishing a link between the onshore positions of shipping companies in Shanghai and the masters and chief engineers, facilitating the transfer of some excellent masters and chief engineers to onshore positions, and expanding the number of high-end maritime talents in Shanghai.

5.5. Founding Cultivation and Transition Base of High-End Maritime Talents

Shanghai Municipal Human Resources and Social Security Bureau, Shanghai Municipal Transportation Commission, Shanghai International Shipping Centre Development and Promotion Organization and other departments or organizations can work together with the employer of high-end maritime talents in Shanghai to formulate the Shanghai standard of the cultivation of high-end maritime talents with the employer from the perspective of the building of the national sea-related strategy, the building of Shanghai International Shipping Centre and the sustainable development of shipping industry, connect with international rules, standards, technology and needs. Relying on universities such as Shanghai Maritime University, Shanghai Jiao Tong University, East China University of Political Science and Law, Shanghai University of Finance and Economics, etc. to found the cultivation and transition base of high-end maritime talents in Shanghai Pilot Free Trade Zone Lin-Gang Special Area and Hong Kou North Bund Shipping Development Area, to develop high-end maritime talents training courses and recruit masters and chief engineers of international sea-going vessels on a pilot basis, and to carry out high-end maritime talents training projects according to the standards established, aiming to cultivate high-end maritime talents in line with the needs of building Shanghai International Shipping Centre.

On this basis, the trained masters and chief engineers will be guided to serve in shipping service companies engaged in shipping management, shipping brokerage, shipping finance, shipping insurance, shipping law, shipping consulting, etc. aiming to give full play to their professional skills and practical experiences in navigation, and expand the employment channels and career development space of their own.

5.6. Building Talents Supply and Demand Information Database and Exchange Platform

On the basis of the existing platform of shipping talent data, the Shanghai International Shipping Talent Service Centre should take the lead in establishing a multi-party information sharing mechanism for administrative departments, shipping companies, colleges and universities, and use mobile interconnect technology such as Wechat applet to input the key information of high-end maritime talents including the university of graduation, academical degree, household registration, certificate of competency, sea service qualification, application intention, etc. into the talents supply information database by means of registration management, qualification audit, interface import, etc. while the key information of shipping companies including the type, scale, supporting policy, salary, etc. into the talents demand information database, forming the high-end maritime talents supply and demand information database. Then a positive circulating mechanism of information sharing would be created by regularly updating and releasing the supply and demand information of high-end maritime talent.

On the basis of the existing "shipping talent service season", build the supply and demand exchange platform for high-end maritime talents by means of both online and offline methods, establish a good talent supply and demand matching channel between high-end maritime talents, talents and companies, companies and companies, and form an effective talent supply and demand matching mechanism, so that high-end maritime talents can find an appropriate job to do, and shipping companies can recruit what they want.

Finally, a multi-level and multi-functional high-end maritime talents market system with the government talent market as the support, the shipping industry talent market as the main body, and the shipping talent intermediary service organization as the supplement will be gradually formed to smooth the flow channel of high-end maritime talents and promote the orderly and reasonable flow of high-end maritime talents among different companies, different systems, and different departments in the industry.

6. Conclusion

To achieve a series of goals of the building of Shanghai International Shipping Centre, a large number of compound high-end shipping talent with good theoretical literacy and rich practical experience are needed. From the perspective of career promotion and path of developing, the personnel who has obtained the certificate of competency for the master or chief engineer of international seagoing vessels have a good foundation to become high-end shipping talents, Therefore, these talents are defined as high-end maritime talents.

Public information and investigation data show that there are still problems exists in high-end maritime talents of Shanghai International Shipping Center, which include a short of quantity, low marketization of recruitment and application channels, uneven distribution of talents'

employment positions, big salary gap between ship and shore, limited ship-to- shore career transition and ability improving mode, etc.

In order to better cultivate high-end maritime talents, it is suggested that the government, shipping companies and maritime universities should work together to open up the channel for the ship-to-shore career transition of masters and chief engineers, expand the scope and improve the level of their employment ashore, and enable them to work stably and permanently in shipping companies ashore, and give full play to their theoretical and practical advantages, aiming to provide high-end maritime talents support for the building of Shanghai International Shipping Centre.

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