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WORLD MARITIME UNIVERSITY

Shanghai, China

The Development Research on Market of Chinese Seafaring Officers

By

CAO JIN

China

A research paper submitted to the World Maritime University in partial fulfillment of the requirements for the award of the degree of

MASTER OF SCIENCE

In

INTERNATIONAL TRANSPORT AND LOGISTICS

2007

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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.

…….

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ABSTRACT

Title of Dissertation: **The Development Research on Market of Chinese Seafaring Officers**

Degree: **Master of Science in International Transport and Logistics**

The Chinese seafaring officer team is the core of national merchant fleet. Because of the open-policy the Chinese government takes, high speed economic development has been achieved during the past 25 years. Nowadays, China has the fourth biggest merchant fleet in the world. However, the development of Chinese seafaring market is not in the same proportion, just after 10 year's increase during the 1990s, the exportation of Chinese seafarer has remained stable. This dissertation focuses on the seafaring officers and tries to analyze the resource of officers and, loss of officers and the utilization of officers. Finally, this dissertation tries to find out the actual situation of Chinese seafaring officer market, the loss and wastage and there by gives suggestions for solving this problem and improve the Chinese seafaring officer market.

This dissertation will give the general condition of world seafarer market and the general condition of Chinese seafaring officer market in the 2nd chapter. And then, the 3rd chapter will analyze the training capacity of Chinese MET both in quantity and quality. In the 4th chapter, the loss of seafaring officers will be the key point. This author will estimate the actual loss rate and the reasons for loss of seafaring officers in China. After that, the 5th chapter will predict the future demand and analyze utilization of Chinese seafaring officers. In the end, this author will give the suggestions about how to increase the training capacity of Chinese MET and to improve the Chinese seafaring officer market.

KEY WORDS: Market of Seafaring Officer, Loss of officer, MET, Reformation of Officer Market

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LIST OF ABBREVIATIONS

COSCO	China Ocean Shipping (Group) Corporation
China Shipping	China Shipping (Group) Company
DMU	Dalian Maritime University
JMU	Jimei University
MET	Maritime Education and Training
MCC	Ministry of Communications of P.R China
MOC	Ministry of Commerce of P.R China
MOE	Ministry of Education of P.R China
MSA-China	Maritime safety administration P.R China
STCW	Standards of Training, Certification and Watchkeeping
SOE	State-Owned Enterprise
SMU	Shanghai Maritime University
WHTU	Wuhan Transportation Science and Technology University
WTO	World Trade Organization

INTRODUCTION

1.1 Background of this Dissertation

At the beginning of new century, world economy increased. The international shipping market became more and more dynamic and at the same time, the international seafarer market developed very fast. In the same period, there is a huge demand for the seafarers, especially for seafaring officers.

For the Chinese domestic seafarer market, China has the fourth biggest merchant fleet in the world, the increase of the number of vessels creates the demand of seafarers, especially the high quality seafaring officers. For the aspect of international seafarer market, the world wide shortage requires more and more Chinese officers to be introduced to the world fleet. Because the seafaring officers are the core of the crew members on board of a vessel, whether the China has a powerful and high standard seafaring officer team has a close bearing to the national merchant fleet and the seafarer exportation. In a word, both China and the world need the Chinese officers to accommodate.

In China, when the STCW convention entered into force, the experts of maritime education and shipping industry had a kind of optimistic motion to the development of Chinese seafarer market. They thought that the new convention will give the new opportunity even a turning point to the exportation of Chinese seafarers. The experts of international marine transportation also optimistically anticipated that China would replace Philippines as the first exporter of seafarers in 21st century. The common view believed that the Maritime Education Training (MET) in China is better than that of Philippines and the new standard of STCW convention would lead to the reduction of Philippine seafarers. It was an opportunity for Chinese seafarers to full up the positions that occupied by Philippine seafarers. However, unfortunately, the prediction made by experts was proved to be incorrect. A decade passed by, the

exportation of Philippine seafarers did not decrease but increased from 170,000 to 198,000 in 2003 and 200,000 in 2006. On the contrary**,** the exportation of Chinese seafarers in the international seafarer market was between 35,000 and 40,000 and has no signs of tendency of significant increase in the recent years.

The demand of seafarers in the international market and the sluggish development of Chinese seafarer exportation form a striking contrast.

1.2 Literature Review

By review the previous works of Chinese seafarer market, this author finds interesting phenomena that most of previous works were done before 2002 and the common ground of them is they all try to draw a bright future for Chinese seafarer market. Mr. Gong (2000) suggested that China is set to replace the India and become Asia's second largest supplier of seafarers. What is more, Li and Wonham (2002) argued that China will become the largest seafarer supply country in the world in the future. Mr. Shen (2001) believes the China will be the last country to bring young people to the world fleet.

In general, the basis of this optimistic evaluation can be summarized into the following statements: Firstly, the open policy, the WTO Entry of China and the world wide shortage of officers can bring the new opportunity for Chinese labor market. Secondly, as China has systematic and advanced maritime education system, the new international regulations open the door to the international seafarer market. Thirdly, as the most populous developing country in the world with the huge human resource, the Chinese people long to enter to international labor market. Fourthly, the cost advantage will keep the competitiveness of Chinese seafarers

But, recent researches show that the increase of Chinese seafarers is slow and the seafarer exportation just remain stable in the recent year. Mr. Huang (2005) pointed

that the growth rate of Chinese seafarers is extremely low, only less than 1% per year. Some scholars begin to exam the Chinese seafarer and seafarers market. Jianwen (2005) point out that the control from SOE shipping company and the vicious competition between manning companies are key factors of the dissatisfactory wage of Chinese seafarer. The article by Bin Wu (2004a) which is based on the questionnaire to Chinese seafarers in HK point out that the mobility of Chinese seafarers just increases a lot and the Chinese seafarers are no longer homogeneous but distinguished. Then Chuan (2005) pointed out that the “talent turnover and loss” of seafarer officers is the main problem to Chinese seafarer market in the future.

For aspects of legislation and legal system, Nande (2005) and Haijun (2006) suggested that the seafarer output law should give seafarers right to conclude the service contract directly with foreign employers and the Chinese seafarer market should open to the foreign entities. The current researches show there is a trend that China will issue the seafarer law soon after. Most of scholars think the new seafarer law will be favourable to the improvement of seafarer management.

It is worthwhile to point that the previous researches usually put the ratings and officers together. The researches special for seafaring officers usually focus on the maritime education and training. The early research paper by Chengqiang (2004) shows that the reform of maritime education in China should be divided into 3 parts. For Chinese government, the special policies should be more effective, the maritime education should enjoy more policies, such as the reduction of tuition and more appropriate funds. For educational institutions should focus on high level education. For shipping company, the re-training and vocational education should be reinforced.

1.3 The Framework and Content of this Dissertation

This author believes that the Chinese seafaring officers are core and spirit of Chinese merchant fleet and shipping industry. Only by healthy development of the seafaring

officers, China can seize the opportunity. However, the administration of Chinese officers market and maritime education are not well segmented by Chinese government. That situation leads a chaotic market and disorderly competition. Now, although some of Chinese scholars just become conscious of the problem which the Chinese seafaring market faces, the real condition of the Chinese seafaring officers is still not explicit for the many aspects of the total number of officer, the training capacity of Chinese MET, the loss rate of officers and the actual utilization of Chinese seafaring officers.

The purpose of this dissertation is to draw an overview to Chinese seafaring officer market and to show the actual situation of this section and its future, by c collecting and cataloguing relevant data from the marine schools the Chinese enterprise and Chinese government. To this purpose, this author will give answers to following questions:

- How many seafaring officers are available to Chinese seafaring officer market?
- What is the Chinese seafaring officer Market and what entities are engaging in this section?
- What is the capacity of Chinese MET and how many newcomers can be introduce to the market?
- What is the situation of Loss of Officers and what is the cause to the Loss of Officers?
- How about the utilization of Chinese officers and does China have surplus of officers.
- How to improve the Chinese seafaring officer market and increase the total number of Chinese seafaring officers.

CHAPTER 2 THE CONDITIONS OF INTERNATIONAL AND CHINESE SEAFARING MARKET

This Chapter focuses on the general conditions of global seafaring officer market and then it specifically elaborates on the entities and the perspective of Chinese seafaring officer market**.**

2.1 The Development of International Shipping Market

The world sea borne trade has increased rapidly in past decade. According the statistics of WTO, mainly driven by certain economies, such as USA, and East Asia, the increase rate of global trade was 9% in 2005 and 8% in 2006. According to the report of WTO as on April 12Th, 2007 the increase of global trade will slow down but the increase will be as high as 6%. From 1990 to 2005 the Sea borne trade increased more than 2.9 billion tons and the average increasing rate in these 15 years is 3.67%(see Table 2-1).

With the increase of sea borne trade, the World Merchant Fleet is developing at a very rapid speed. In the past decade, the number of Merchant Fleet vessels increased by 2838 and the deadweight tonnage increased by 133.6 million tons (see Table 2-2).

Table 2.1-The trend of world sea borne trade

Year	Sea borne trade (million tons)	Sea borne trade turn over (million tons)	Average productivity per ship (ton –miles) in thousands
1994	4506	194610	76775
1995	4684	201880	78212
1996	4859	206780	78252
1997	5092	218250	80830
1998	5067	214920	78707
1999	5137	214800	76975
2000	5230	214950	77180
2001	5513	232400	79720
2002	5549	232500	86320
2003	6124	230560	87520
2004	6413	245630	92241
2005	6804	267590	94178

Source: http://www.cnexp.net

Table 2.2-The trend of world merchant fleet

Year	The World Merchant Fleet			Flag of Convenient Fleet			
	Number	Dead weight ton (million tons)	Average dead weight ton	Number	Proportion	Dead weight ton (million tons)	Average dead weight ton)
1994	24893	652.4	26210	9087	0.3650	303.4	33390
1995	25348	663.0	26160	9339	0.3684	315.9	33830
1996	25812	669.5	25940	9746	0.3783	325.6	33350
1997	26425	685.4	25940	10317	0.3904	349.9	33910
1998	27001	702.5	26020	10605	0.3928	364.5	34370
1999	27529	722.2	26230	11364	0.4128	392.7	34560
2000	27905	732.4	26250	11658	0.4178	388.8	33350
2001	28300	736.5	26270	12302	0.4563	425.3	33683
2002	28370	742.3	26350	12798	0.4892	479.6	33946
2003	29210	755.6	27350	13495	0.5362	522.6	35962
2004	29322	788.2	27860	13890	0.5896	566.3	36895
2005	29960	796.6	27980	14563	0.6354	623.5	36758
2006	28650	805.1	28101	15269	0.6848	686.5	36622

Source: http://www.chinahyw.com

In addition the development of ship enlargement makes reduction of handy size bulk carriers. Experts anticipate that the handy size ships will continue to decrease and total tonnage of the handy max bulk carriers will increase from the 56.2 millions to

65 million tons. The increasing trend of fleet of panamax and cape size is still obvious and the total tonnage of them will increase from 68.4 million to 85 million tons and 82.1 million to 95 million tons respectively. (2005 annual report on China's shipbuilding industry). In the liner shipping, the proportion of slots on the container carriers whose capacity is more than 4000 TEU's is more than 30%. The development of post-panamax container carrier goes beyond the expectations. The carriers whose capacity is more than 8000 TEU become the main force in the international routes between different continents. At the same time, the enlargement of oil tankers is stable, because of the restriction of entry channels of various ports around the world.

Considering the new technological developments in shipping industry, today we have ships constructed of high quality standards and with most sophisticated equipment. We have the UMS ships which are the unmanned machinery spaces which require quality officers with good quality training standards to run these ships. Considering the ships like the LNG, LPG, carriers require officers with advanced level of training standards. Taking into account all these factors, today we have the shortage of qualified officers to run the so-called Hi-Tech ships.

In general, the combination of development of shipping market, the ship enlargement and the new technology leaves an increasing demand of officers both in the quantity and quality.

2.2 The Conditions of International Seafarer Market

From the world wide demand and supply of seafarers, the BIMCO/ISF issued the report of manpower for merchant seafarers for recent 5 years. From this report, we can see that the world wide demand of officers was 476,000. On the contrary, the officers supply capacity of world officers was 466,000. These estimates in the report indicate a modest theoretical worldwide shortfall of 10,000 officers or 2 % of the total workforce (see Table 2-3).

Table 2.3-The Demand and Supply of officer in 2005

	Supply (in thousand)	Demand (in thousand)	Balance (in thousand)	%
Officers	466	476	-10	-2.1

Source: BIMCO/ISF, (2005).BIMCO/ISF manpower 2005 update

The number of commercial fleet in the past 10 years has increased by an average 1% per annum. So, the overall demand of officers and ratings has also increased in major proportion. The report also forecasted the situation of supply and demand in year of 2015 (see Table 2-4)

Table 2.4- The Supply/Demand Balance in 2015

	Balance (in thousand)	%
Officers	-27	-5.9

Source: BIM/ISF, (2005).BIMCO/ISF manpower 2005 update

That indicates that the diminishing supply and increased demand will make the shortfall of officers more serious in the future. Otherwise, in the forecast done by BIMCO/ISF seems any seafarer who has C.O.C is qualified seafarer and the increase rate in number of world fleet is higher than 1%, for example the increase rate in 2004 and 2005 is 5.7% and 2.9% respectively. So, if we take the quality of seafarer and the increase rate of recent years into account, the future situation may be more pessimistic than the estimate of BIMCO/ISF.

From the Age-structure of the seafarers, the seafarers from OECD countries the percentage of officer who is over 50 year's old was over 24% and 18% of seafarers were over 55 year's old. The seafarers come from Far EAST, Africa and Latin America have reasonable age structure, but the officers from China and India are inclined to relatively short working life on board.(see Table 2-5).

Table 2.5-The age structure of officers in world seafarer market

Area of domicile	Below 20	20-25	26-30	31-40	41-50	51-55	Over 55	Total
OECD	0.4	5.7	9.4	18.8	27.5	24.0	17.8	100
Africa and Latin America	1.2	6.5	22.1	35.5	26.4	8.0	0.5	100
Far East	0.3	7.0	18.1	35.5	31.9	4.7	2.4	100

Source: BIM/ISF, (2005).BIMCO/ISF manpower 2005 update

By summarizing the results of manpower update of 2000 and 2005.We can see that, the officer's nationality has continued to shift from the traditional maritime countries of Western Europe, Japan and North America towards the Far East, Indian sub-continent and Eastern Europe. The number of seafarers of OECD countries decreased from 36% of total in 2000 to 28% in 2005, dropped by 8 points of percentage. Some countries and regions, such like South Korea, Japan, Taiwan, Hong Kong and Singapore, have already shifted from seafarer supplier to the seafarer importing countries/regions. We can see from the picture, in these years, the officers coming from Indian and East Europe increases rapidly and they have already occupied a proportion of share which belongs to officer from Far East. (See figure 2.1).

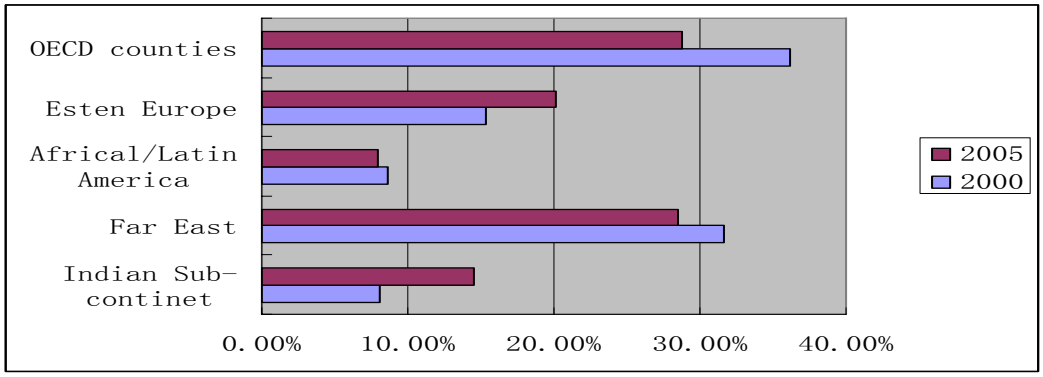

Figure 2.1-Officer supply by area of domicile 2000 and 2005

Source: BIMCO/ISF manpower 2005 and 2000 update

In addition, the BIMCO/ISF 2005 Manpower update also pointed out that the recruitment levels of seafarers need to increase further to meet anticipated demand. Although the overall recruitment and training levels have increased, the levels of numbers leaving the industry have been increased too. To keep the dynamic balance of demand and supply of seafarers, some countries should take methods of upgrading ratings with necessary education and skills for promotion to officer.

2.3 The General Conditions of Chinese Officer Market

The Chinese seafarers are an inseparable part of international labor force and make great contribution to international shipping industry. Because of the shortfall of senior officers in international seafarer market, to introduce and train more Chinese seafarers to meet the needs of the domestic and international market is a significant approach to healthy development of shipping industry and increases the income of Chinese people**.**

2.3.1 The Definition of Officers in this Dissertation

Before this dissertation's discussion the total number of Chinese officers, we should confirm the definition of the Officers in the first place. Actually there are many definitions of the seafarer in many Maritime Laws and International conventions. But this kind of definition always focuses the functions of seafarers on board of vessels and they are not suitable for the definition of seafarers who are the elements of seafarer market. Take the *Maritime Code of People's Republic of China* for example, as the Article 31"The term 'crew' means the entire complement of the ship, including the Master.", and the Article 32 "The Master, deck officers, chief engineer, engineers, electrical engineer and radio operator must be those in possession of appropriate certificates of competency."

To solve the problem of the definition of seafarer, this author uses the operational definition of seafarer according to Guanbao S. (2005):

The operational definition of seafarers (include the officers and ratings) should be the people

- who has Chinese nationality and registers himself as a seafarer in the China MSA and
- who is working on a merchant vessel or has experience of work on a merchant vessel in the past 2 years and
- whose income is mainly from the wages of working on board of a merchant vessel.

So, combining the special features of officers, this author gives the definition of Chinese officers as following:

The officer in Chinese seafarer market should be the people

- who has the Chinese nationality and register himself as a seafarers in the China MSA China and
- who possess Seaman's Book for officer and has the certificate of competency for captain, first mate, second mate, chief engineer, second engineer, third engineer ,fourth engineer or radio operator at and
- who is working on a merchant vessel or has experience of work on a merchant vessel in the past 2 years and
- whose income is mainly from the wages of working on board of a merchant vessel..

This definition is suitable to the original purpose of this dissertation and only if we obviate the foreign citizen of Chinese origin, the people working for shipping management and coming off job from the working force of officers, we can find out the actual scale of Chinese officers and the real condition of the seafarer market.

2.3.2 The Total Number of Chinese Officers

To analyze the quantity of Chinese officers, there are two indicators such as total number of Seaman's books[1] and the class A and B[2] Certificate of Competency. According to the statistics of China MSA, there are 62,000 seafarers who have the seaman's book the year of 2006 and 61,000 seafarers who have C.O.C in officer's 8 positions at class A in year of 2006. These two figures are not total number of Chinese officers who are available to the seafarer market because they include a part of pilots, sailors, teachers and practitioner concerning shipping management on shore. This part of people has never been taken into statistical analysis by Chinese government or organization concerning seafarer. But this part of error should not make too much difference to the total number of Chinese seafarers. So this author estimates the total number of Chinese officer should be around 55,000 to 60,000.

2.3.3 The General Condition of Chinese Officer Market

To analyze the Chinese officer market we should give a general condition to Chinese seafarer market. Nowadays, there are lots of researches and dissertations about Chinese seafarer market and many practitioners and scholars published their comments on shipping journals and magazines. But only a few of them have been given a clear perspective to the Chinese seafarer market.

According to the definition of labor market, an integrated labor market should have such components, such as the Labor Providers, Training Institutes, Demand Side of Labor and Intermediaries.[3]

---

[1] According the *Regulations of the People's Republic of China, Article 17*on Seafarers The seaman's book of the People's Republic of China is a document for the Chinese seafarer on a mission abroad to show his/her identify as a citizen of the People's Republic of China.

[2] The C.O.C at A is for the seafarers who serve on the ship over 3000 DWT and for the unlimited navigation area. But the officers who take C.O.C not only serve on the ship with over 3000 DWT. Because the total number of officers who take the C.O.C at class B, the proportion of which is only 6% of that of A in year of 2002 and it is can be ignored.

[3] Xiujun Zhang. (2003). On the Exploitation and Market Distribution of Manpower Resources,

2.3.3.1 The Labor Provider

The labor provider means the people who are willing to or qualified to a certain job. The labor provider should include:

- the worker who has already receive appropriate training and is engaging a certain job;
- the worker who has already receive appropriate training and is not engaging a certain job;
- the potential worker who is willing to engage a certain job.

Whether the labor provider engages to a certain labor market or not depends on such factors like Wage, Treatment, Working Condition, Social status to the job, entry cost, influence of family and the influence of other jobs.

China is rich in labor resource and human talent. In consideration of the relatively dismal employment condition of China, we have huge potential labor resource of officers. But, because of the working condition on board of ship and other factors, less and less seafarers consider the adventure on sea as a life-long career. What' more, because the officers can easily to find a job on shore as a shipping or logistics manager nowadays, the loss of officers become more and more serious. This phenomenon gives lots of uncertainties to the Chinese seafarers and officers and brings out serious wastage to the resource.

2.3.3.2 Training Institutes

The training institutes can be defined as the schools and other organizations which provide training services to the trainees for professional skills. In general, there are 3 categories of training institutes to seafarers in China. The first one is regular college

education supported by universities and colleges; the second one is short term training programs mainly focus on navigation skills; the last one is certificates training according to the SCTW78/95.

Training institutes play an important role in the seafarer market. Firstly, they provide basic education required for the common man to enter into the seafarer market according to the international conventions and national regulations and bridge the gap between the technological development, shipping industry and seafarer market.

2.3.3.3 The Demand Side of Chinese Seafaring Officer Market

The demand side of labor market is the employer of man power. In China, there are more than 290 shipping companies and they control more than 2525[1] different merchant vessels in tonnage and categories. As the main demands of the Chinese officers, the demand side of officers in China mainly is the SOE shipping companies, such as COSCO, China Shipping and China-CSC. They own and control more than 90,000 seafarers, including 25,000 officers. In addition, with the development of seafarer exportation, the foreign ship owners are also important demanders of Chinese officers and ratings.

2.3.3.4 Intermediaries

Nowadays, the intermediaries in seafarer market can fall into two categories. The first category is the 58 companies which are authorized by Ministry of Commerce of the People‘s Republic of China (MOC for short). These kind of manning companies have authorization to issue Exit Permit, which is a key document for seafarer’s exportation, to seafarers. In last year (2006), the MOC liberalized the restriction of the authorization to issue the Exit Permit, but the MOC still require the manning companies should have the capacity to export at least 500 seafarers and have at least

[1] This number of vessels includes the sea-going and inland water vessels.

1000 seafarers registered.

Actually, the most of these 58 companies are the state-owned shipping companies. So, they have support from the Chinese government and they own and control a large part of seafarers and officers. However, because of the enterprise operation mechanism and overstaffed organization, they are under process of reformation.

In fact, ship manning function of the Chinese SOE shipping companies mostly relies on the manning department. The main functions of such department are to recruit seafarers, optimize the utilization of the seafarer resource and organize the professional training. In the early stage of 1990s, the operation mechanism of Chinese SOE shipping companies is the combination of shipping management, operation and manning in one entity. The shipping companies owned not only vessels but also seafarers. The seafarers are bound to work on certain ships. Such mode has many defects and not good for seafarer resource utilization.

The Chinese SOE shipping companies launched the reform since 1996 for the seafarer management. Take the COSCO for example, from 1996 to 1998; the major branches of COSCO established their own “Manning Companies” respectively. (see table 2.6)

Table 2.6-The “manning companies” belonging to COSCO.

The branch of COSCO	The subject "manning company"
Dalian Ocean Shipping Company	COSCO Dalian Seafarers Management Company
COSCO Bulk Carrier CO.,LTD	Cosco Tianjin International Manning Cooperation
Qingdao OCEAN Shipping Company	Qingdao Ocean Foreign Labor Cooperation
COSCO CONTAINER LINES	COSCO SHANGHAI MANNING CO
Guangzhou Ocean Shipping Company	COSCOGZ Crew Management Company

Source: the website of above branches of COSCO

These “Manning Companies” are affiliated to their mother companies and they are not independent legal entities. They run more like “virtual companies” and have

internal independent accounting mechanism. On one hand, they crew the ships run by their mother companies and charge them for hiring. On the other hand, they also crew other companies and foreign ship owners. Anyway, such “virtual company” mode is based on “virtual market mechanism” which is far from perfect.

The other category includes hundreds of small private manning companies. Their existence can not be suppressed, because their business depends more on the market mechanism. However, they have no support by shipping companies and Chinese government and have no authorization to issue the Exit Permit to their registered seafarers. The only way for them to export seafarers to entrust the companies which have such authorization, which will increase the cost to them and their seafarers. From this aspect, this kind of manning companies is only the second tier agents and, finally, the seafarers will pay for the extra cost incurred.

2.3.3.5 The Government Control

At present, there are many government departments and organizations concerning the seafarer market, such as Ministry of Commerce, Ministry of Labor and Social Security, Ministry of Education, Maritime Safety Administration, Ministry of Public Security, Ministry of Health, China Customs, All China Federation of Trade Union and so on. These governments department and non-governmental organizations are not inter-dependent and have no jurisdiction over each other. The regulations are far from perfect and some regulations from different departments are compatible. For example, the new *Regulations of the People’s Republic of China on Seafarers*, *Article 29* prescribe that “if a seafarer wants to conclude a labor contract with a foreign employer in the name of himself, the contract can refer the standard form issued by the All China Federation of Trade Union”. But the actual situation is that if a seafarer wants to work on a foreign ship, he should have the Exit Permit issued by a manning company which has such authorization. This reality makes the new regulation become a dead letter. What’ more, there is no coordinator to coordinate and make effective communication between different departments and organizations.

2.3.4 The Symptom of Chinese Seafarer Market

So, according the analysis above, we can draw a picture about the entities of Chinese seafaring officers. (see figure2.2).

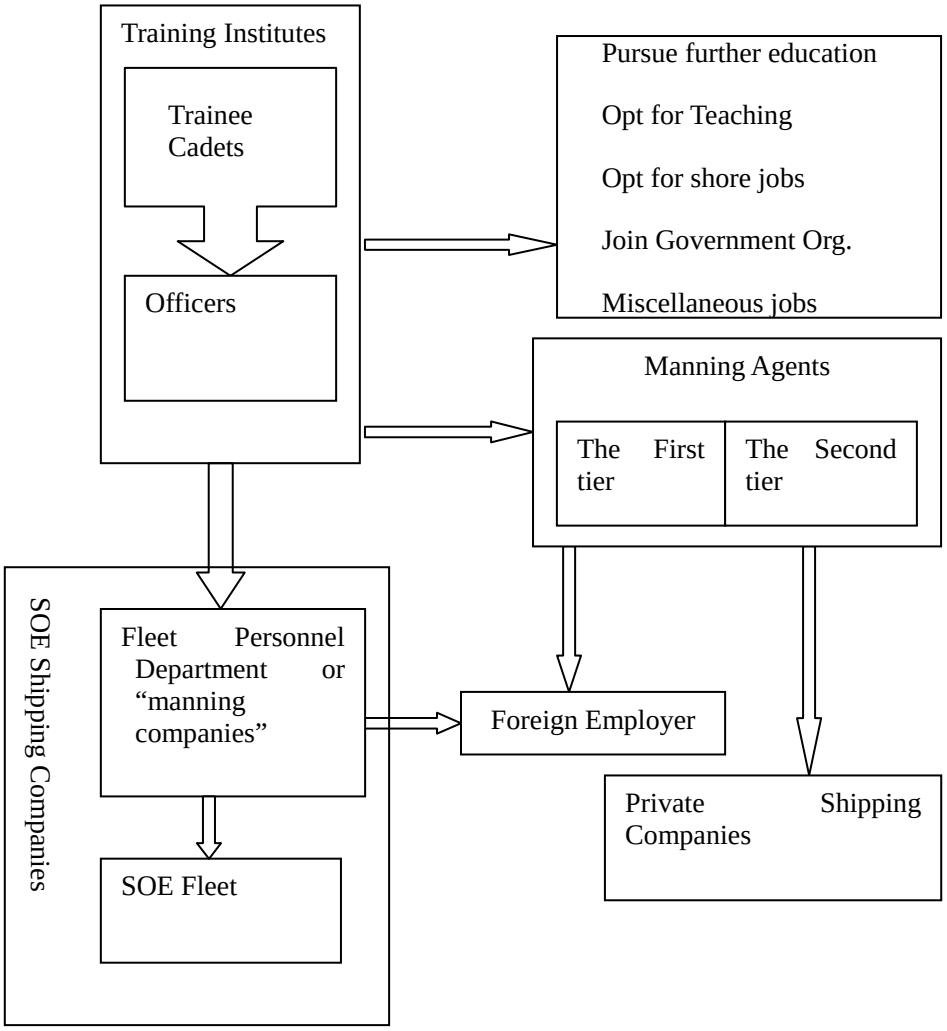

Figure 2.2 - The general perspective of Chinese officer market

The symptom of Chinese seafarer market is absence of market mechanism. The majority of officers in China are in charge of SOE shipping companies, which consists of 65% of the total number. The rest of 30% is controlled by the manning companies or agents, the remaining 5% officers are freemen or self-employed. The

recent researches show that the proportion of freeman is increasing. (see figure 2.3).

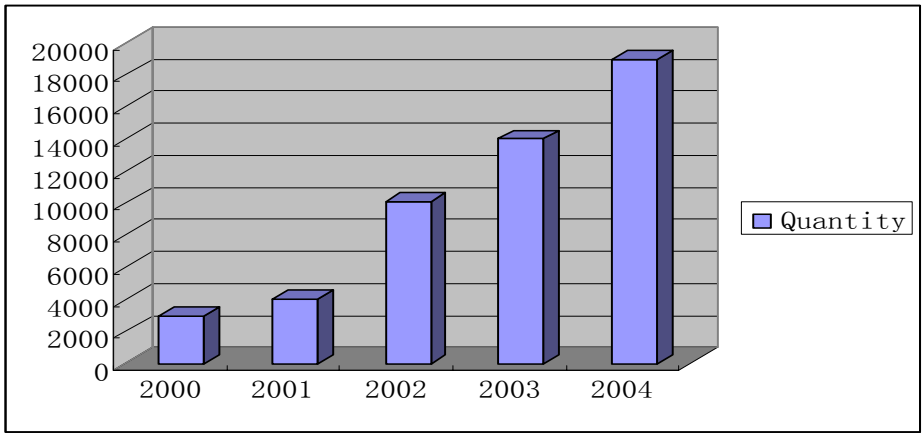

Figure 2.3 - The trend of Freeman in China [1]

Resource: Chunjin Cao,(2006). *Global labor market & Chinese seafarers manning abroad*. World Shipping, 2006 (3),17-21.

From the view of mobility of seafarers, the freeman is highest but when tied with the SOE shipping company is lowest. Between different organizations, the flow is only in one direction. That is from SOE shipping companies to manning companies or agents and, finally, become freemen. But due to the highest flexibility and lack of supervision, during this process of flow between different organizations, many of the seafarers leave the industry. This phenomenon is high especially among the freemen. In this process, every demander wants to scramble the limited resource of officers, which leads to vicious competition. For particular reasons, the SOE shipping companies and manning agents are inclinable to control the seafarer by no means of good wage and welfare but the impolite ways such as long-term contract and taking out the personal documents and certificates. The officers become the victims.

In addition in the aspect of government and education, there are problems of multi-tier administration and supervision. However, this kind of demonstration means lack of distinct division of functions. So, this author thinks that the Chinese

[1] This result is among ratings and officers. As there is no further information about the proportion of officers in the group of freeman, this number is unpredictable. But, I presume the proportion should be between 20% to 30%, of total number, after attending to the authority.

officer market is far from perfect and needs fundamental reform to change it.

CHAPTER 3 THE SUPPLY FACTORS (SOURCE AND STRUCTURE) OF THE CHINESE OFFICERS

3.1 The Training Capacity of Chinese Officers

At present, the Chinese officers mainly come from the graduates of maritime education institutions. They receive systematic education in the colleges or universities. Now, there are more than 30 maritime education institutions for officers, including 6 universities, 8 associate colleges and about 20 vocational secondary schools (see table 3-1). The Length of Schooling of these colleges and schools varies from 2 to 4 years. In addition, because of the adjustment of national education system in recent years, some of maritime education institutions are on the process of reformation.

In the university aspect, according to the policy of higher education expansion, the Chinese traditional maritime institution, such like DMU, SMU, WHUT and JMU, expand their enrollment scale gradually (see table 3-2). However, except for DMU which is controlled by Ministry of Communication directly, the expansion of other colleges is not very obvious comparing with the regular institutions of higher education. In fact, considering the expansion of DMU, it is largely depended on the affiliation with Dalian Maritime Academy and the capacity is not increased considerably either. Actually, such increase just occupied the resource of non-universities.

Table 3.1 - The distribution of Chinese maritime educational institutions

Level of Education	Institution	Length of schooling	Regulatory Bodies
University	Dalian Maritime University(DMU)	4 years	MCC
	Shanghai Maritime University(SMU)		Local Government and MOE
	Jimei University(JMU)		Local Government
	Wuhan Transportation Science and Technology University(WHTU)		MOE
	Ningbo University		Local Government
	Guangdong Ocean University		Local Government
Associate College	Qingdao Ocean Shipping Mariners College	3 years	COSCO
	Guangzhou Advanced Maritime College		Local Government
	Guangdong Communication Polytechnic		Local Government
	Zhejiang Institute of Communication		Local Government
	Nantong Nautical School		Local Government
	Jiangsu Nautical School		Local Government
	Shanghai Maritime Vocational & Technical College		China Shipping
	Wuhan Marine College		China-CSC
Vocational Secondary School	Other 20 vocational secondary schools located in the coastal cities	2 to 3 years	local Government

Table 3.2 - The graduate/enrollment scale of Main Maritime Education Institutions from 1998 to2003 and 2006

University	1998	1999	2000	2001	2002	2003	2006
DMU	358	520	715	1100	930	1100	1190
SMU	349	365	365	447	445	449	580
WHTU	261	350	350	420	380	280	570
JMU	391	449	405	490	430	452	420
Ningbo University							80
Guangdong Ocean University							140
Total	1359	1684	1835	2457	2185	2281	2980

Source: MCC, (2004), *Comprehensive report for Shipping Industry,* Unpublished research paper of Chinese government and the websites of above universities.

Note: The statistics of 18 to 2003 is actual graduates from above universities, and statistics for 2006 is enrollment plan. So, the actual student of 2006 should be a

little bit smaller.

Due to the relative high investment and the higher requirement of maritime educations in comparison with the regular professional studies, some educational institutions which had offered maritime training earlier and has suspended in recent years, such as Henan University and Hebei University of Technology. Nowadays, there is no provision for any colleges or academies to be affiliated with maritime universities, such as Dalian Maritime Academy, Nanjing Maritime School, Nanjing Navigation School and Nantong Navigation School. Therefore, although there is a huge expansion of Chinese regular higher education, the training capacity of Chinese maritime university is still not coping with the present market demand.

For the non-university education aspect, the table 3.3 demonstrates the training capacity of associate colleges and vocational secondary schools in China. (see table 3.3)

Table 3.3-The Structure Non-University maritime education in 2006

Training Institution	Number	Training Institution	Number
Guangdong Ocean University	140	Tianjin University of Technology	120
Guangzhou Advanced Maritime College	232	Qingdao Ocean Shipping Mariners College	540
Nantong Nautical School	65	Shanghai Maritime Vocational & Technical College	80
Yantai University	33	Nanjing Nautical School	85
Shanghai Fisheries University	15	Wuhan Vocational & Technical College	121
Guangdong Communication Polytechnic	80	Zhejiang Institute of Communication	150
SMU Continuing Education College	200	DMU Continuing Education College	250
		Other	1000
Total	3111		

Source: the website of above colleges and schools

Apart from the normal college education, there are ways for experienced fishermen or seafarers of inland water vessels to become an officer by appearing and clearing

the examinations conducted by the Ministry of Communication to obtain Certificate of Competency (C. O. C.).An officer on obtaining further sea service experience, he can go for higher grades of C. O. C. To the capacity of this part, the relevant statistics in 2005 is about 4000 per year. But only 8% to 10% of them can get the C.O.C at Class A and most them just service on small costal vessel and inland water vessels In addition, it is worthwhile to point out that most of them have no systematic study of English. So, this author estimates the contribution of this approach can not be more than 400 in recent year.

In addition, for the propose of increasing the number of officers and to meet the present market demand, the MCC has introduced a new system in November 2006, in which any person who has the bachelor's degree in any engineering stream has the option to become a officer by undergoing basic one year pre-sea training course and then appearing the examinations in order to obtain C.O.C. Nowadays the first intake of students for this program is study in some major marine schools, such as SMU and DMU. The total number of the first intake should be 500.[1]

Considering the above approaches, the outcome of the new system may not result in creating an efficient officer who is capable enough to serve on an ocean-going vessel. Even the shipping companies of China may think so and it will be difficult to find employment in maritime sector for persons who obtain C.O.C by the above method. So, according the statistics this author gets, the number of graduates graduating from Universities is about 3,000, from Associate colleges and the Vocational secondary schools is 3,100 and the other 900. In general, without considering the uncertainties, the training capacity of Chinese officers is about 7,000 per year now.

3.2 The Quality of the Chinese MET

3.2.1 The College Education

[1] The enrolment of SUM is 80 and WMU is 100 for this special program. There should be other marine schools just take this program, but the actual enrollment scale should not be more than 500.

First of all, the characteristic of the Chinese MET is to combine the college education and the vocational education together. That is when the students graduate from the universities or training school and pass the C.O.C, they can obtain corresponding academic degree and the C.O.C. The advantage of this teaching pattern is to give a wider employment options for the students. But the drawback is also obvious. For one hand, for 2 to 4 year study, every student should finish the courses as a common college students and the vocational education synchronously. This kind of combination can not concentrate both the college and vocational education at the same time. On the other hand, because the widen options of employment, the graduates from maritime universities can easily to find a job on shore instead of working on a ship.

Secondly, from the view of teaching method, the Chinese MET has been poised in chalk-teaching for a long time. Except for the DMU and SMU, the number of equipment required for the simulation is not enough in many other colleges. The equipment available for the teaching is not up to the standards and a proportion of the equipment can not be actually used.[1] The whole of the equipment is not maintained in proper order by the training center or the university .The high maintenance costs required for these kinds of equipment are to be borne by these educational institutions themselves. Until and unless the government takes necessary steps and provides support like the financial support, these institutions can not make use of the equipment satisfactorily. In addition, the regular multimedia teaching equipment is also not sufficient, such like Overhand Projector and Video Projector.

Thirdly, the level of English is still not satisfied, although it has been great improvement. In the year of 1999, the passing rate of the graduates from traditional maritime universities to CET 4 is only 25%. In 2003, the over 95% maritime graduates passed CET 4 and part of them passed CET 6. Indeed, most of them have

[1] By attending to the relevant personnel of a major maritime university, this proportion can be about 30% and for other marine school the situation may be worse.

relatively good proficiency in reading and grammar; they have better English basic knowledge, but relatively poor listening and speaking ability, comparing with seafarers who come from other countries.

3.2.2 Cadets on Board

After having basic ship knowledge in the universities, the students are sent on board for undergoing practical training. During the period of practical training, the student is required to complete the Record Book under supervision of a Training officer. It is an important process for a student to become a qualified and competent officer. However, because of the lack of educational investment, the cadet ships of maritime universities are not capable enough to provide necessary training for all the students. So, the students who do not get a chance to undergo their training on board cadet ships, are forced to look for an employer to conclude a labor contract and complete their onboard training. Such training ships are engaged in commercial trade and owned by shipping companies. This kind of internship is not satisfied. First of all, the period of training on board is 6 months for a Chinese student, this time period of 6 months is very less when compared with other countries.(see table 3.4).

Table 3.4 - Training period of some countries

Country	Length of Schooling	Period of on board training
Germany	4 years	12 months
Holland	4 years	12 months
Sweden	4 years	16 months
United Kingdom	4 years	12 months
India	4 years	24 months[8]
China	4 years	6 months

Source: Guohua G, (2001) *The Study on the Maritime Education and Training of Marine Officers in*

[8] In year of 2003, every India cadet is required to do pre-sea training for a period of 12 months, after completion of this pre-sea training he is sent on-board for on-board training for a period of not less than 24 months, after successful completion of on-board training, the student is required to attend the college and clear the MMD (Mercantile Marine Department) examinations to obtain Certificate of Competency.

Secondly, the execution of onboard training is also not satisfied. As for the university curriculum, the planning of the student on board training is such that the student is provided with training officer who shall execute and monitor the performance as per the student record book. But in comparison the actual training on board a merchant ship is quite different. Considering the Chinese national fleet, there is no special person dedicated or appointed as a training officer. What's more, the ship a student going onboard is decided by the shipping company and no one knows that whether the equipment on the ship is suitable for training. The real situation is that some ships are obsolete and can not provide the service of training.

Thirdly, most of shipping companies have no passion of training new seafarers and can not guarantee the sufficient time for training. Many students can only go on board for 3 months or even less.

The quality of the cadet, there are not enough supervision standards and the record book different from different university and the supervisor is not competent enough to provide proper training and supervision.

3.2.3 On Gob Training

On the conditions of working on board, the development of new technologies, ship equipment and international regulations, force the seafarers to update their knowledge and skills in due time. However, the seafarers are inclinable to focus on the compulsory training for up-grade, because such training immediately concerns their career. But the reality is that the Safety standards, English speaking skills, and international regulations concerned such as SOLAS or the PSC are the foremost essential elements in international shipping today. In spite of getting the Chinese seafarers cost–effective in the world market, but the ship owners are equally concerned about the safety, efficient running of their ships by highly qualified and

efficient seafarers which the Chinese seafarers lack the most, it is believed that the Chinese seafarers do not concentrate on these issues, so the reputation of Chinese sea farers is not good comparing to other countries and this is the reason that the Chinese sea farer can not be the first choice of a foreign ship owner.

CHAPTER 4 LOSS OF SEAFARING OFFICER IN CHINA

4.1 Trends of Loss of Seafaring Officers in Global Seafarer Market

With the development of economy, the values of the youths of the western developed countries have changed a lot. Young generation is not willing to work on ships. The long-term decline in number of seafarers becomes a serious problem on world scale. Especially, in the recent years, the shipping industry has developed rapidly. That creates great demand for personnel of shipping management and makes the officers which have rich experience of shipping can easily find a well-paid job on shore. The insufficient manpower on board has already affected shipping industry in these countries. Take the Untied Kingdom for an example, as a traditional shipping power, the main shipping lines was controlled by the merchant fleet of United Kingdom. Although, the officers of UK have their advantages to occupy the higher passions on board, the imbalanced age structure threatens the scale of seafarer in UK. The total number of officers in UK decreased from 28,000 in 1980 to 8,600 in 1993 and finally the total number of officer in 2004 is3, 000. If such trend can not be hold up, the officers of UK may be extinct in the future. Even in Asia, a number of developed maritime countries, such as Japan, Singapore and South Korea, are following the experience of Western maritime countries. During the passed 20 years, the total number of Japanese officers decreased from the 22,500 to less than 3,000 in 2004. There is a famous “rule of 3000 dollars”. That is, from the development of seafarer market in the traditional maritime countries, when the average income of a certain region excesses 3000 dollars, the development of seafarer market would become to dog down. Along with the constant growth of income, the number of seafarer would be decreasing.

4.2 The Definition of Loss of Seafarer in this Dissertation

From the view of human resource management, the phrase of “Brain Drain” is often used to describe the loss of skilled intellectual and technical labor through the movement of such labor to more favorable geographic, economic, or professional environments. However, in the flied of shipping industry, we often use “Loss of Seafarer” to describe the following phenomena:

- the person who was a seafarer but does not work on board a merchant ship any longer;
- the person who has received maritime education but does not work on board a merchant ship.

In the BIMCO/ISF Manpower Update, they use the phrase of “Wastage of Seafarer” to describe such person who leaves this industry. The reason is that to cultivate a qualified officer needs large investment of money, time and equipment. Meanwhile, the accumulation of experience of the seafarer himself is an irreplaceable in this process. This expression indicates that the “Loss of Seafarer” is a serious wastage to both the shipping industry and maritime education.

The Loss of Seafarer can be classified into three categories: Voluntary, Involuntary and Natural Loss. (see Figure 4.1)

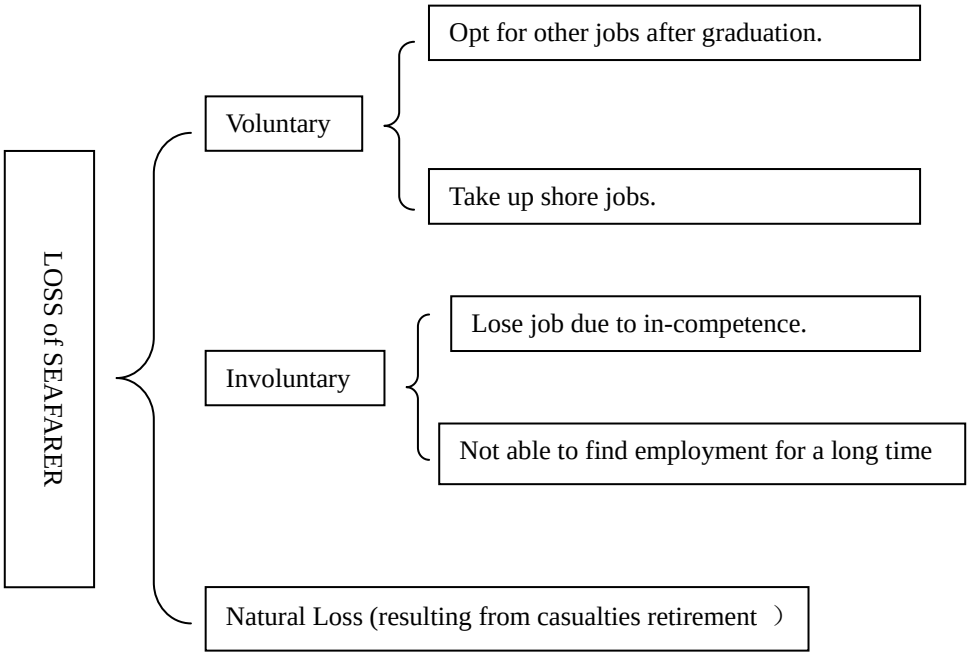

Figure 4.1- The construction of loss of seafaring officers

The feature of the Loss of Seafarer in China is that the flow of manpower has only one direction. That is personnel are flow from ship to shore job.

4.3 The General Condition of Loss of Officer in China

4.3.1 The Loss of Training Capacity

The loss of seafaring officer just begins when the cadets go into the maritime universities and colleges. According to a questionnaire of career intention made by SMU among the cadets in year of 2003, 52% of the cadets show unwillingness of working on board when they graduate, and 78% of them will not choose seafaring as a life long career. Although it may be an unsound conclusion[9], it still indicates that becoming a seafarer will not be the first choice among the majority of graduates. Statistical date of Chinese maritime educational institutions indicates clearly that the number of the cadets who have completed the marine education but failed to become

[9] This author only gets this information from the teacher of Student's Affair Division of SMU verbally, but this author believes it is worthwhile to be a reference material.

a seafarer is considerable. (see table 4.1).

Table 4.1 - The employment of cadet of major maritime universities from 1998 to 2003

	Total Number	Shipping Companies or Manning Companies	Bureau of Salvage	local Port Authority	Other	Unemployed	Further Education
DMU	3252	2540	156	100	60	227	169
SMU	2059	1532	104	108	172	104	38
WHTU	2019	1337	75	145	289	139	40
JMU	2211	1821	89	115	40	135	15
Total	9551	7230	424	468	561	605	263
Cadets Working on Merchant Ships：7230（75.4%）			Other Professions：2321（24.6%）				

Source: MCC, (2004), *Comprehensive report for Shipping Industry*, Unpublished research paper of Chinese government.

Note: The following factor has not been taken into account: Some of the cadets who employed by China Shipping and China CSC do not join the Ocean-going officer category but service the inland water vessel.

The proportion of the cadets working on merchant ship after four years study is 75.4% and the rest has lost. But the latest information this author got from National Graduate Guide Center of Cadet in recent 4 years (03-06) proved more pessimistic situation. From 2003 to 2006, the Chinese maritime institutions cultivated 8863 cadets who have graduate degrees. But only 4563 cadets accounted for 52% of total graduates work on board merchant ships[10]. The author added that this data had not included the cadets working on private owned shipping companies and this proportion should occupy about 5%-10%[11] of cadets. Together this should be a number of 57 % to 62%. Distinctly, there still is a big gap with statistics of 2003.

[10] 41% of cadets work for SOE shipping companies and 11% work for manning companies.
[11] Due to lack of ability providing practice on board, the number of cadets go to private shipping companies fluctuates a lot every year.

After attending to the expert graduates guide centre of SMU, the proportion of SMU graduates becoming seafarer should be lesser than 70%, and diminishing every year. The statistics of SMU can also prove this point of view. (see figure 4.2).

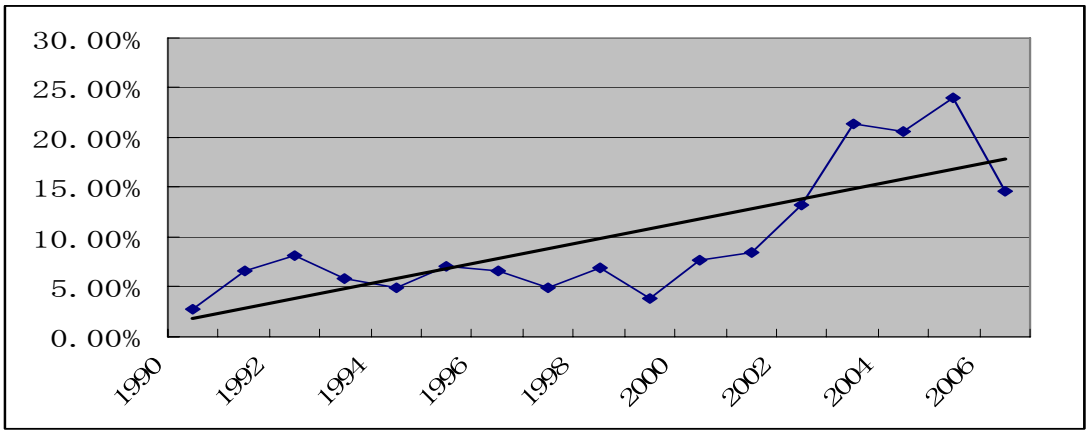

Figure 4.2 - The Trend of Graduates opting for land job of SMU

Source: Student's Affair Division of SMU

Note: The statistics above involved graduates employed by Bureau of Salvage and local Port Authority and experience tells such number can reach a proportion of 8% to 10% of total graduates in recent years.

By comparison, the graduates who come from associate colleges and secondary vocational schools employed by merchant ships remain relatively stable. Taken the Qingdao Ocean Shipping Mariners College as an example, about 90% graduates go to work on board merchant ships. But among such graduates, there are 5% of total numbers who fail to complete the study or to pass the examination of C.O.C. In the view of the fact that there are different ranks of non-university maritime institutions in China, this author presumes the available training capacity of non-university institutions should be around 75%[12].

4.3.2 The Loss After Being Employed

[12] 85% of total cadets can go to work on ships and 90% passing rate of examination of C.O.C. 85% * 90%=75%

The cadets are still losing severely after they becoming officers. Take a Chinese SOE shipping company for an example. (see figure 4.3).

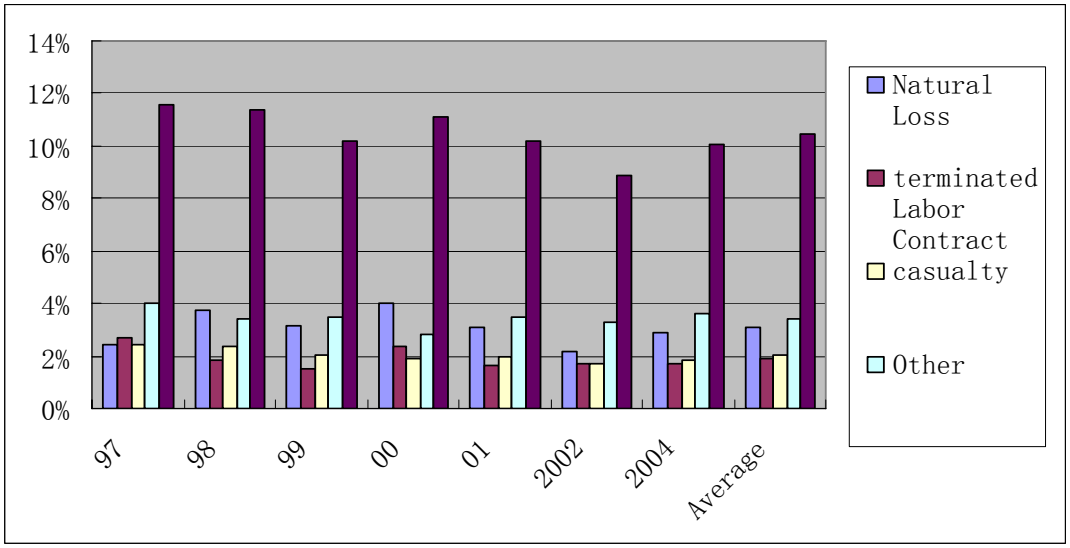

Figure 4.3 - Classification of officer loss in a major Chinese shipping company

Source: the personnel department of this SOE shipping Company

Note: 1, the statistics of 2003 missing

2, Natural loss can be classified into retirement, death and suicide.

3，“Other” mainly includes position shifting from on board job to land job within this companies

This large-scale SOC shipping company owns and controls about 15,000 officers accounted for 25% of total number in China. Together the natural loss and casualties have reached a proportion of 5.2% and the officers shifting from floating jobs to shore jobs within this shipping company occupy a total of 3.7%, just as the figure shows**.** In addition there are 1.8% officers who terminate the employment with this company every year. Still, those who earn seafarer as living but resign from this company and jump to another firm are included, and also those who choose other profession rather than seafarering. Generally speaking, about 10% officers leave this company every year. Although this figure from this company could not show the whole problem of the loss of Chinese seafarers, it can still indicate that the loss of Chinese seafarer is serious.

In addition, it is worthwhile to mention that this company refused to reveal the recent statistics. But it still expresses that loss of officer has trend of increase in recent years and the main reason is the imbalance of age structure of officers (see figure 4.4).

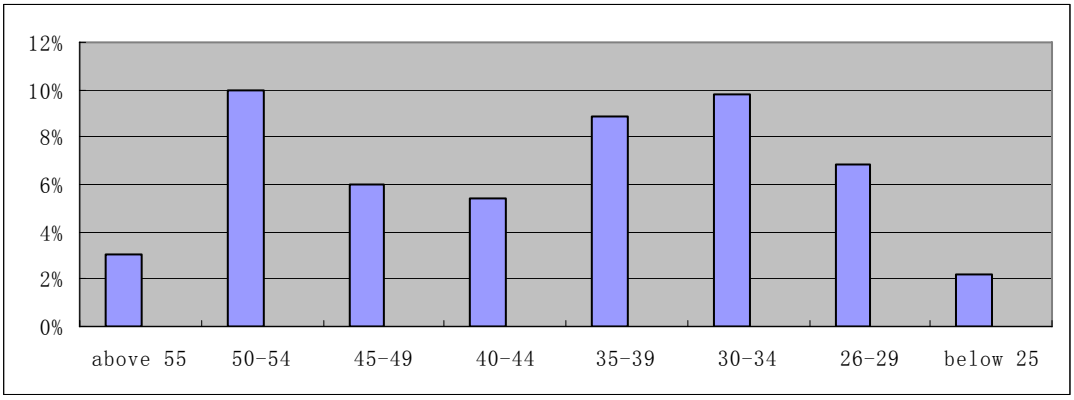

Figure 4.4 - Age structure classification in the Chinese shipping company

Source: the personnel department of this SOE shipping Company

It shows that more than 13% of officers are above 50 years old. Because, this large scale SOE shipping company occupies considerable proportion of officers and this author believes that it can represent the general condition of loss of seafarer in China. That means in the near future, 5 years later, Chinese officer team will face a concentrative retirement of officers.

The loss of officer can be reflected by the average working age is generally low, only about 10 years (see the table 4.2).

Table 4.2 - The working age on board (in years)

Major	1982	1985	1989	1995	Average	Total Average
ship navigation	11.4	9.9	8.9	9.2	9.85	10.4
ship engineering	12.2	12	13.2	6.7	11	

Source: Student's Affair Division of SMU

Note: This figure has based on part of the graduates of the year 1982, 1985, 1989 and 1995 from DMU and SMU and no precise total number. After attending the

Student's Affair Division of SMU, this author believes that the number of effective questionnaire should be about 500 accounted 25% of the total number of cadet in according year. However, it is worthwhile to mention that the effective questionnaires are mainly come from the officers who employed by SOE shipping companies whose working age should be longer than that of officers belong to manning companies and freemen.

This 10-year working age proves that after 10-year's working on board ships most officers will leave for a shore job. In the same time, 10-year working experience is also the necessity for cultivating a captain or chief engineer. That is it just after taking almost 10 years for an officer to become a Captain or Chief Engineer of a ship and then they just leave this industry.

What's more, besides the SOE shipping companies, the loss of officer in manning companies or in the group of freemen would be more serious, especially for new cadets. Although there is no statistics to show how the situation is, for some shipping companies, more than 60% cadets just leave after they finish the first 18 month internship on board.

In conclusion, if we consider the proportion of natural loss and casualties (5.2%) of the SOE shipping company as an average in the whole officers. And that the "other" (3.7%) of this SOE shipping company as the average of all SOE shipping company. It will occupy 2.2%[13]. Then take the uncertainties into account, this author presumes the average loss rate of Chinese seafaring officer should not be less than 8% conservatively. In the future, this author believe the loss rate will increase.

4.4 The Negative Effects of Loss of Officers

The loss of officer can leave immense and long-term effect to Chinese shipping

[13] The Chinese officers belong to SOE shipping companies take the proportion of about 60%. So, the average loss rate of "other" should be 3.7%×60%=2.2%.

industry and Chinese seafarer market. These negative effects have manifested themselves mainly in the spheres of total quantity of officers, shipping companies and national strategy of shipping.

4.4.1 The Negative Affect Total Quantity of Officers

From the analysis about the training capacity and the loss of officers, we can draw a conclusion about the trend of the development of total quantity of officers.
The effective training capacity of Chinese officers is:

$$3100 \times 75\% + 3{,}000 \times 70\% + 900 = 5325$$

However, if the loss rate accounts 8%, per year, the total number of loss is:

$$60{,}000 \times 8\% = 4{,}800$$

The net increase is only about 525 per year (0.8%) and this increase rate is lower than the average increase rate of ship (1%) and the average increase rate of officers presumed by BIMCO/ISF (2% to 2.5%) This result shows that China has no capability to enlarge her national officer team. What's more, only if the loss rate is more than 9% per year, China will face a negative increase of total quantity of officers. What's more, the increasing loss rate of training capacity can also make the situation more serious. It is a big difference between the reality and the forecasting made in early year. If this trend continues it is reasonable to expect the Chinese seafaring officer will decrease.

4.4.2 The Negative Affect to the Shipping Companies

The cost of maintaining and training officers is very high. According to the FALMHOLTZ model Falmholtz (1985, p 90) and the actual situation of shipping company, we can see clearly that how a shipping company is suffered by loss of officer.(see table 4.3)

Table 4.3 - The cost of loss of officers based on FALMHOLTZ model

Total cost	Cost incurred on a new-comer	Tangible Cost	Recruitment
			Selection
			Employ
			Placement
		Intangible Cost	Efficiency loss in period adaptation
	Training cost	Tangible Cost	Training Cost
		Intangible Cost	Time Cost of Training
			Efficiency loss of training
	Living cost	Tangible Cost	Victualling cost
		Intangible Cost	Efficiency loss before the actual loss
			Replacement unavailable

Source: Flamholtz, E. G. (1974), *Human Resource Accounting*, Dickenson

From the picture above, we can see that besides the tangible cost such as the cost of recruitment and training which are directly concerned with money and manpower. According relevant research, for a skilled profession, to replace such personnel the tangible cost which is directly concerned with recruitment and selection will occupy the150% to 200% of total year wage of the position. So, for special feature of officer, the cost including training may even higher.

Beside that, there are many intangible costs which can not be counted in specific quantity. For example, the tendency of leaving of an officer can lead to unsteady mind among other officers. In addition, a loss of officer from flouting job to land job can make an over-optimistic appraisal and other officer may tend to follow his way. Such kind of unsteady mind and appraisal can lead to loss of efficiency. In addition, to cultivate a senior officer needs accumulation of experience in many years. So, the loss of senior officer can not be compensated by recruitment of a new cadet.

4.4.3 The Negative Affects to Chinese Shipping Industry

For any country to be economically developed, the country should concentrate on its trade which includes the international trade. The successful international trade of a country depends on its merchant fleet strength. We can thus define the merchant fleet

as the backbone of any country's international trade. The stronger the merchant fleet the more is the international trade. For a country to have strong merchant fleet, the seafarers are the one who make up this merchant fleet. So, for a country, the seafarers form the Core of the international trade. For a country like China which has unlimited economic growth opportunities in any sector, for the international trade to gain a sustainable growth, highly qualified and competent officers are very much required for her merchant fleet. The China merchant fleet is increasing considerably year by year, but the efficient officers required to run these ships are not increasing in the same proportion. For example, as the new national strategy of oil transportation of China, there will be more than 100 new vessels of oil tanker, LGP and LNP carrier to introduce to the market before 2010 and capacity of Chinese energy transportation will double. This will create a demand of more than 3000 Chinese officers accounting for 5% of total Chinese officers. What's more, different from bulk and container vessels, officers of oil tanker or other specialized vessels should be competent and veteran enough. However, in consideration of the training capacity of Chinese officers and existed quantity and quality of them, China will face a dilemma to meet such demand.

Overall, there is a severe shortage of officers in China merchant fleet. Until and unless correct measures are taken to outcome this shortage, this may lead to a disaster in Chinese merchant fleet.

4.5 The Causes of High Level Loss

4.5.1 Uneven Development of Regional Economies

As a development country, the annual disposable income of urban households is only 1330 USD and that of rural is only 407 USD in 2005. Simultaneously, the Registered Urban Unemployment Rate is 4.2 % in 2005 and has been increasing every year. (see figure 4.5).

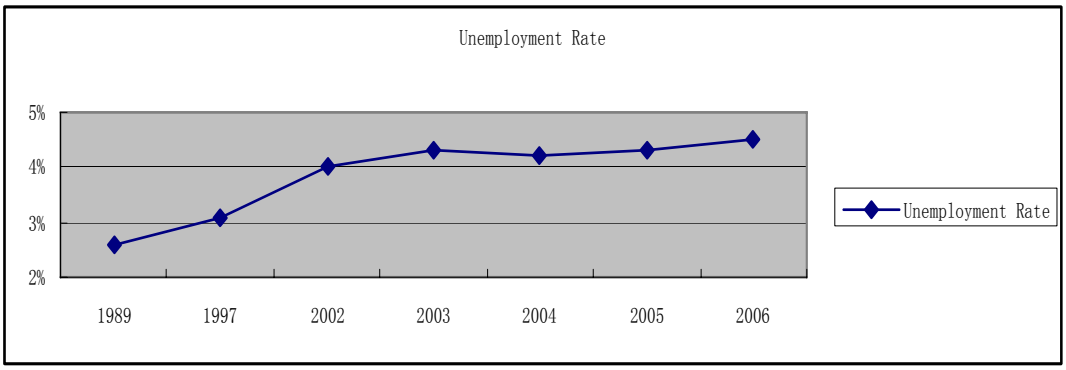

Figure 4.5 - The change of registered urban unemployment rate of China

Source: http://www.stats.gov.cn/tjsj/ndsj/2006/indexch.htm

From the experience of seafarer market, China deserves a great contribution of world seafarer market for the relative high payment of on board job. Owning to such uneven development, the central and west regions, particularly the latter, now, in general, lag behind the coastal areas in east China. However, the Open Policy and great economic development makes an uneven development of regional economies, especially in costal cities. The average income of staffs in many coastal cities exceeds 3,000USD. (see table 4.3).

Table 4.4 - The average income of staff and worker of some cities

City	Average Income	Increase Rate(Last year)
Shenzhen	USD4,310	2%
Guangzhou	USD4,299	4%
Shanghai	USD4,293	10%
Beijing	USD4,074	10%
Hangzhou	US$3,905	3%
Nanjing	USD3,819	4%
Dalian	USD3,699	10%
Ninbo	USD3,468	9%
Dongguan	USD3,419	11%
Suzhou	USD3,039	10%
Qingdao	USD2,530	5%

Source: National Bureau of Statistics of China and local bureau of statistics of above cities

In above cities, there is a concentration of shipping industry. Almost all the cities are

shipping of logistic centre of respective regions. More than 18 in total 30 maritime education institutions are located in these above cities, which occupy over 60% of total training capacity of officers in China. In addition, more than 80% of officers register or obtain employment in these cities. Simultaneously, besides the relative high level of economic development, these cities are leaders of china's development in many aspects. In other world, ,most of Chinese officers have their training, job or live in such cities which can offer them better job or living conditions.

The stability of officers has great relationship with the accommodation or residence of seafarers and the latter would have negative effect on the former. The table shows a mobility of officers of a private shipping company in Guangzhou. (see table 4.4)

Table 4.5 - The loss of officer in a private shipping company in Guangzhou

	The number of officers in 1998	The number of officers in 2003	Newcomer	Number of Loss	Proportion of Loss	Rank
Shanghai	31	15	4	20	65%	1
Guangdong	253	201	62	114	45%	2
Fujian	196	168	45	73	37%	3
Zhengjiang	45	42	12	15	33%	4
Jiangxi	46	89	57	14	30%	5
Hunan	78	124	60	14	18%	6
Sichuan	39	78	46	7	18%	6
Total	688	717	286	257		

Source: Chunhui H, (2005), *Research on Talent Turnover of Chinese Ocean Senior Officers*, Unpublished master's research paper, Zhejing University, Hangzhou, China

Note: This shipping company owns about 750 officers for its own bulk carriers and also engages in the seafarer exportation business.

We can see that the loss rate of officers who come from Shanghai, Guangdong and Zhejiang is over 80.5% and the number of officers who come from such regions decreased in these years. Although this is a small case and can not tell the overall situation, it still can prove the potential relationship between the stability and

residency of seafarers. The reality is that, in these days, the shipping and manning companies are more and more concerned about the residency or *Hukou*[14] location of officers.

4.5.2 The Negative Affect from Wage

The wage of Chinese seafarer is low and it is a generally accepted fact in the world (see table 4.6).

Table 4.6-The wage of captain and support crew number of different countries

	Wage of captain		Wage of Support crew		year working time (in month)	
	Bulk carrier	Oil tanker	Bulk carrier	Oil tanker	Captain	Support crew
China	2700-3300	3550-4500	820-1000	970-1200	8 to10	8 to10
Croatia	4600-5010	5700-6500	2100-2300	2100-2300	3 to 6	3 to 6
Denmark	8000-10000	11000-14000	3500-3700	4000-4500	3 to 4	3 to 4
Egypt	3800－4000	4400－4600	1800－2000	1800－2000	6 to 9	6 to 9
India	4700－5000	5500－6500	1160－1350	1160－1350	6	8 to 10
Burma	2200－2400	2500－3000	350－400	430－500	12	12
Philippine	3600－4000	5000－6000	1050－1350	1050－1350	3 to 8	8 to12
Poland	4500－5000	5900－6500	1200－1550	1200－1550	4 to 6	4 to 6
Rumania	3000－4000	4900－5500	1100－1500	1100－1500	6	8 to 9
Russia	4200－4500	4500－5500	1300－1500	1300－1500	6	6
Ukraine	3400－4000	4000－4500			5 to 9	5 to 9
the U.K.	8000－10000	9500－12000	3000－3800	3000－3800	3 to 4	3 to 4

Source: Jianwen G (2006). Global labor market & Chinese seafarers manning abroad. *World Shipping*, 1,7

The wage of Chinese seafarer (in table 4.5) is the wage stipulated by labor contract between the seafarers and foreign employer. After the payment from the foreign employer, the manning companies will charge at least 25% of total wage for administrative fee and there are still much other kinds of charges which are so-called

[14] "*Hukou*" is the "household registration" of Chinese people, gives an individual the legal right to live in a city and receive coinciding social benefits including medical treatment, social welfare, housing, children's education and house.

commission charges. Actually, the wage a seafarer can get is only 60% to 70% of total payment from foreign employer. So, the average wage for a captain is only about 2000 USD and for a third mate is only 600 USD per month in average. The wage of seafarers working for Chinese employer is much the same. What's more, there is hardly a wage during the holidays for Chinese seafarers. Taken a large-scale SOE shipping companies for example, the wage during holiday depends on the age of seafarers, for younger than 45 is 48 USD and for older than 45 is 56 USD per month. For the seafarers belong to manning companies, the wage for holiday is approaching to none.

Although the wages of Chinese officers has a big gap with other countries, it has long been considered that the relative high payment for officers still has its advantage to other jobs and the Chinese officers should keep this advantage of low cost for international seafarer market.

In fact, in 1960's the Chinese officers were veritable high income group. In the 1960s, the incomes for a captain and third mate are 4000 RMB and 1900 RMB respectively. Comparing with the average income of 150 for Staff and Worker, it is extremely high. In 1970s and 1980s, the average income for ship officers remained the 10 times higher than other land jobs. In addition, the necessities for life were provided by shipping companies and the seafarer did not need to worry about the life. So the seafarering indeed had its advantage to other jobs. However, after 1990s, the high speed development makes such advantage begin to decline. (see figure 4.6).

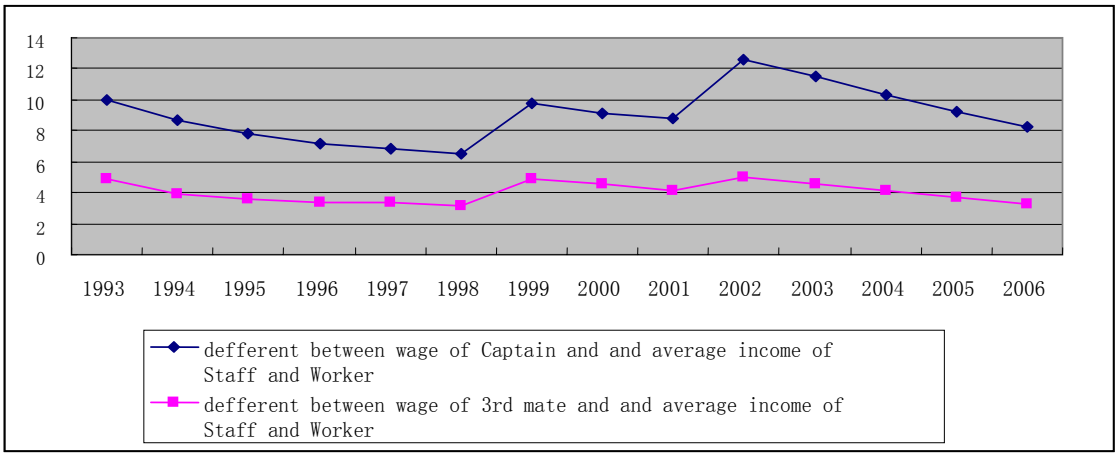

Figure 4.6- The comparison of yearly average wages between seafaring officers and average income of staff and worker[15]

Source: National Bureau of Statistics of China and the wage table of the SOE shipping company

Note: 1. The wage is calculated according to the wage table of a large-scale SOE shipping company.

2 .The average working time on board is counted by 8 months; the average wage of holidays is RMB 500 per month.

3. During the period from 1993 to 2006, there are the wage table has been changed 3 times, in the year of 1993, 1998 and 2002. In the rest of period, the wage table did not change at all.

4. The wage structure of officers is complicated, and it includes different ranks of position wage, bonus and overtime subsidies according different kind of ships. But the result is accepted by the senior officer of personnel department of this company.

From the picture above, we can see that the difference between the officer wage and average income of staff and workers has not changed much from 1993 to 2006, except for that of 1998 and 2002, when the wage table was adjusted. For most of time the wage of a captain is 8 times higher than the average income of staff and workers and for 3rd mate it is 2.5 times. However, during these 15 years, great changes have taken place in China and Chinese society. The requirements for living

[15] The term of the "everage income of staff and worker" is a key indicater to describe the income of city dwellers.

condition, mental life, entertainment and working condition have greatly improved. The consumption structure of Chinese people had been greatly improved, with the Engel coefficient decreasing to 36.7 %; their cultural, recreational and service expenditures had risen to 35.4%; and the proportions of accommodation and clothing expenditures are only 8.1% and 6.2% respectively. Comparing with hard working and lonely living atmospheric conditions, the wage advantage of officers is in a diminishing stage.

For anther aspect, comparing with income level of the cities with high speed development, the advantage of wage for ship officer is approaching to zero. What, more, we can see that in the year of 1998 the wage of a 3rd mate is even lower than that of average income of people of Shenzhen.(see figure 4.7 and figure 4.8)

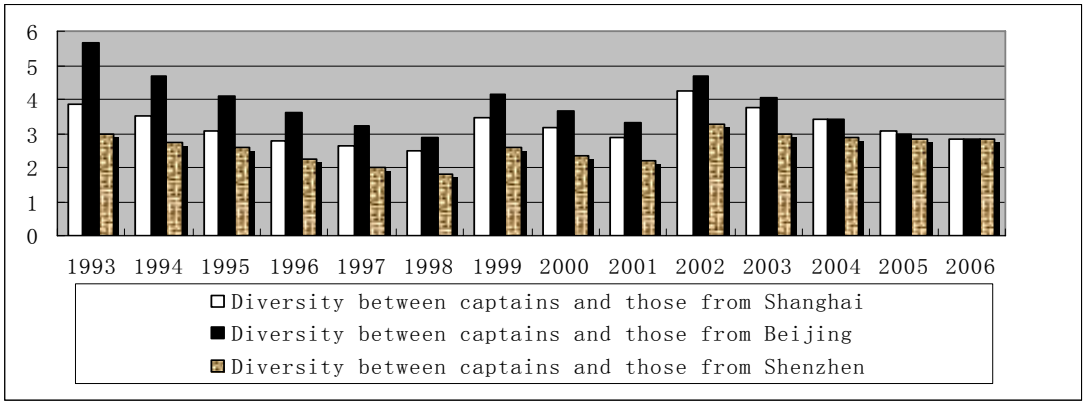

Figure 4.7 - The compare of yearly average wages between 3rd mate and workers of part countries of China

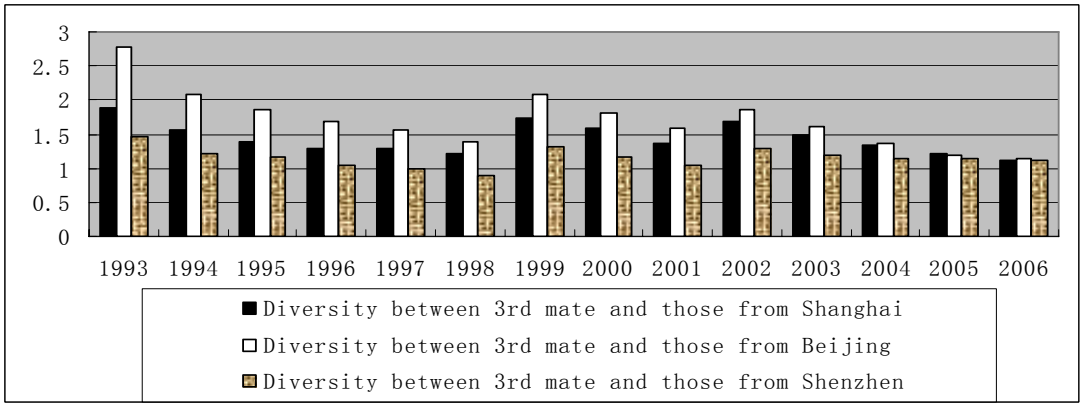

Figure 4.8 - The compare of yearly average wages between Captains 3rd mate and workers of part countries of China

In addition, the target jobs for ship officers shifting from floating jobs to land jobs mainly are shipping, logistics and transportation management. These industries are the registered as the fastest growth with high speed of increase of wage. According to the statistics from National Development and Reform Commission, Industry of transportation and communication is the industry that sits with IT and Finance for the fastest salary increase, which pillared by shipping, logistics and warehousing. The average rate of salary increase of transportation and communication industry extended 25% in the past three years and reached the peak 30.6% in last year(2006).

In addition, in according to the statistics from Shanghai Municipal Labor and Security Bureau, the moderate state-oriented yearly wage level for logistics director and free professionals has reached RMB 100,000, while the highest of which is over RMB 200,000. The rapid progressing velocity of this field will, definitely, attract more ship officers shifting their work from aboard onto land.

4.5.3 Impact on Loss of Seafarer from Professional Prestige

The “professional prestige” is the subjective evaluation on the social and economical status of professional activities from social members.[16] For the reason that every factor, including level of education, working condition, wage and welfare and their contributions to the society, of one kind of profession will have an impact on the personal feelings of the professional status. Therefore, this kind of evaluation is the comprehensive judge on professional status from social members. The higher prestige the profession has, the more it will attract people’s choice and people’s flowing into this certain profession. In one word, seafarer’s prestige is a fatal actor leading to the loss of seafarers.

[16] Paul H. Ribbe.(1989)Assessment of prestige and price of professional publications: Corrections and additions. *American Mineralogist.* Volume 74, 689-691, 1989

Currently, seafarer profession has relatively low level of prestige and social status in China, the fist presentation of which is that there is no position for it in the ordinary statistics of social professions. For example, as the most overwhelming professional prestige survey, “Study on changes of social professions in contemporary China” gave no specific position to Seafarer in its 466 kinds of professions which just involved two seafarers-relevant jobs, including “drivers of transportation equipments” and “fishermen”, rank respectively at 230 and 421.

As vocational training definitely regulated by international conventions for 2 years at least, the technical requirements of seafarers shall be competitive with train divers and nurses (ranking respectively at 130 and 73). And from the angle of economical status, the income level of captains (RMB 200,000 yearly) and 3rd mate (RMB 80,000 yarely) shall be competitive with engineers of mining enterprises and junior technicians (ranking respectively at 52 and 101). Although, the boring life and hard working condition can withdraw the professional prestige of seafarer, this author still believe ranking at 200 (or 50%) can be a reasonable professional prestige of seafarer.

However, among the statistics of the professional prestige this writer has gathered, only the three “Professional Prestige Surveys” carried out by Accurate News Survey Center of Law Department in Shenzhen University respectively in 1998, 2001 and 2004 clearly acclaim the profession of seafarers. This survey concerns 100 different jobs. But the ranking of prestige of this profession has declined from 51 of Year 1998 to 64 of Year 2004, still after farmers, cooks and environmental workers. What’s more, we can conclude an interesting phenomenon from this list, the prestige of seafarers declined. While, prestige of pilots, firemen and officers of public security who can compete with seafarers both in characteristics of work and danger of work rapidly soar up.

In sum, on one hand, this phenomenon can prove that ordinary Chinese people do not

understand the difference between the ship officers and ratings and they are inclined to mix up the ship officer and rating into “seafarer”. On the other hand, the ordinary Chinese people have an inborn prejudice to this floating career. This disappointing reality shows that the common recognition of Chinese society on this profession is not high and the prestige of this profession may continue to decline, the result of which will lead more and more loss of seafarers, from this profession to others with higher prestige.

CHAPTER 5 THE PREDICTION OF DEMAND AND UTILIZATION OF CHINESE SHIP OFFICERS

The demand of seafarer depends on the development of shipping industry. Specifically, the main factors are the number of merchant vessels, the technical status or type of vessel and condition of international seafarer market. In general, the demand of Chinese marine officer consists of the native demand and labor exportation demand. From the history of development of Chinese seafarer market, there was a good deal of "surplus officers" in the past, since the overdose of manning level to single ship[17]. Such surplus incur heavy to Chinese shipping companies. From 1979, the Chinese started to export seafarers. Going with low loss rate and healthy increase of seafaring officers, this mode of officer utilization had kept a balance between the native and international seafarer market. The expansion of Chinese fleet went in step with the increase of seafarer exportation during 1990s and the scale of seafarer exportation grew by 3 times. This situation gave an optimistic appraisal of the future of Chinese marine officers. However, entering into the 21st century, this kind of balance will be broken. Because of the limited officer resource, the great increase of Chinese merchant fleet, just begin to withdraw a proportion of officers from international market.

5.1 The Demand Prediction of Chinese Ship Officer from Chinese Merchant Fleet

5.1.1 The Analysis of Key Factors of Seafaring Officer Demand

The key factors of seafaring officers demand are the total number of the Chinese Merchant fleet, the manning level of single ship, Manning coefficient, Loss coefficient and

[17] In the 1980s, the manning level for officers of single Chinese merchant ship was higher than 15. What's more, in some SOE shipping companies, there could be 3 different seafarer teams to service one single ship.

reserve Coefficient.

5.1.1.1 The Total Number of Chinese Merchant Fleet

The number of vessels is the decisive factor to the demand of officers. The increase of total number of vessel can inevitably lead to the increase of seafarers. The increase in number of vessel usually depends on the scale of new building and scrapping of ships.

5.1.1.2 The Manning Level of Single Vessel

According to the *Regulation on Seafarer's Certificate and Examination of Competence of Republic of China, (2004),* the manning level of ocean going ship should be as following table:

Table 5.1 - The manning level of single vessel of China

	Deck department				Engine Department			
Rank	Captain	1st mate	2nd mate	3rd mate	Chief engineer	2nd engineer	3rd engineer	4th engineer
Number	1	1	1	1	1	1	1	1

So, the manning level of ship officer in single vessel in China should be at least 8 people. However, in the recent, there still a position of radio man in some vessels. So the manning level of single vessel should a little more than 8.

5.1.1.3 Manning Coefficient, Loss Coefficient and Reserve Coefficient

Because of the feature of seafaring, the officers working on board can not enjoy their holidays and weekends. So, the seafarers have concentrated working days and holidays. So, the manning coefficient should be bigger than that of single vessel. This author presume the average working time of Chinese officer is 8 months per year according to the regulation of seafarers of China, *Seafarers enjoy, in addition to the*

official holidays, an annual leave of at least five days after working on board for two months.[18] The holidays of a ship officer should at least 120 to 130 days a year. Therefore, the manning coefficient of ship officer should be at least 1.5.

Besides manning coefficient, there should be loss rate, including natural loss, casualty and the officers shifting to land job. Referring to the analysis in Chapter 4, the average loss coefficient should be 0.08 per year.

In addition, in the condition of actual operation, it is impossible for an officer team to shift absolutely seamlessly, for the reason of sick leave, traffic or communication problem. It may take 1 or 2 weeks to complete all documentary procedures to shift all officers in a ship. For small manning companies, this problem may be more serious. What's more, the rank structure of officers can be another problem. In one company, there can be a surplus of a certain rank of officer but a shortage of another. Between different companies, especially SOE shipping company, the officer resource is relatively excluded and they lack willingness and channel to exchange the resource. So, there is a proportion of officers always standing by for the company. This author assumes this reserve coefficient is 0.02.

On the whole, it is can be reasonable to presume that the combination of manning, loss and reserve coefficient of Chinese officer should be at least 1.6.

Therefore, the equation of marine officer demand from Chinese merchant fleet is that:

$$D = M \times S \times (m_c + l_c + r_c)$$

Where:

D …… total number of marina officer

S …… the total number of Chinese merchant ships

M …… manning level of single vessel

m_c …… manning coefficient,

l_c …… loss coefficient

[18] *Article 30, Regulations of the People's Republic of China on Seafarers*

r_c …… reserve coefficient

5.2 The Demand for Ship Officer from Chinese National Fleet

5.2.1 The Trend of Development of Chinese National Fleet.

According to *Year book of China Transportation & Communication 2006*, the trend of Chinese merchant fleet is increasing, except the year 1993. The main reason is the depression of shipping in that year. In the recent years, because of the booming of shipping industry, the total number of Chinese fleet has kept increasing and this author believes that this tendency is likely going to keep on. But due to the world ship-build capacity, the increase rate is stabilized at 3.5% per year in number and 12.5% in transportation capacity. (see figure 5.2).

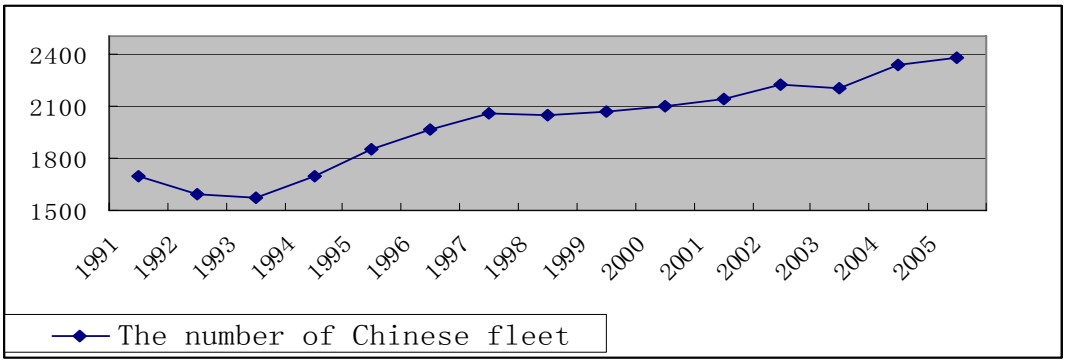

Figure 5.1- The trend of Chinese fleet from 1991 to 2006

Source: Year book of China Transportation & Communication 2006, Year book house of China Transportation and Communication. p 15

Note: 1.The statistics above includes the vessel which is over 500 DWT.

5.2.2 The Prediction of Chinese Merchant Fleet

In the past 15 years, the Chinese fleet has kept a moderate trend of increase. In addition, the increase of number of vessel is mainly constrained by the ship building capacity and the period from order to delivery is relatively long. So, this author

adopts the exponent smooth model to predict the development of Chinese merchant fleet. The predict model is:

$$F_{t+m} = a_t + b_t \times m$$

$$a_t = 2S'_t - S''_t$$

$$b_t = \frac{\partial}{1-\partial}(S'_t - S''_t)$$

$$S'_t = \partial X_t + (1-\partial)S'_{t-1}$$

$$S''_t = \partial S'_t + (1-\partial)S''_{t-1}$$

Where:

F_{t+m} is predict value of future series m; X_t is observed value of series t; S'_t is first smooth value of series t; S'_t is second smooth value of series t and

$$S'_0 = S''_0 = \frac{X_1 + X_2 + X_3}{3}$$

To minimize mean squared error, make ∂ equals to 0.1.

According to exponent smooth model, make the calculation table as following. (see table 5.2).

Table 5.2 - List of calculation of exponent smooth model for native demand of officers

Year	Series	X_t	S'_t	S''_t	a	b	Predict Value
1991	1	1693	1620.33	1620.33	1620.33	0.00	
1992	2	1591	1593.93	1596.57	1591.29	-23.76	
1993	3	1577	1578.69	1580.48	1576.91	-16.09	1568
1994	4	1693	1681.57	1671.46	1691.68	90.98	1561
1995	5	1847	1830.46	1814.56	1846.36	143.10	1783
1996	6	1968	1954.25	1940.28	1968.21	125.72	1989
1997	7	2061	2050.32	2039.32	2061.33	99.04	2094
1998	8	2045	2045.53	2044.91	2046.15	5.59	2160
1999	9	2067	2064.85	2062.86	2066.85	17.95	2052
2000	10	2100	2096.49	2093.12	2099.85	30.26	2085
2001	11	2139	2134.75	2130.59	2138.91	37.46	2130
2002	12	2222	2213.27	2205.01	2221.54	74.42	2176
2003	13	2301	2292.23	2283.51	2300.95	78.50	2296
2004	14	2381	2372.12	2363.26	2380.98	79.76	2379
2005	15	2450	2442.21	2434.32	2450.11	71.06	2461

According to the above calculation, we get the predict equation as follows:

$F_{t+m} = 2450.11 + 71.06 \times m$

Figure 5.2 shows the comparison between the observed values and predict values of number of Chinese merchant ships. (see figure 5.3).

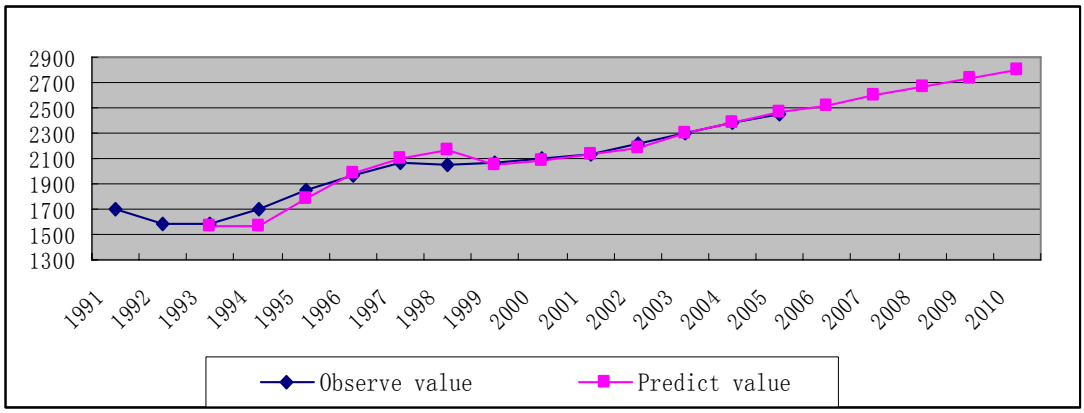

Figure 5.2- The comparison between the observed values and predict values of number of Chinese merchant ships

Draw the future development of Chinese merchant fleet and the demand of marine officers as following table. (see table 5.3):

Table 5.3- The prediction value of vessels and demand of officers

Year	Predict value of vessel	Demand of officers
2006	2521	32269
2007	2592	33178
2008	2663	34086
2009	2734	34995
2010	2805	35904

5.3 The Predict of Demand of Chinese Seafaring Officer Exportation

In the recent year, the exportation of Chinese officers just remains stable; the scale is between 35,000 and 39,000. (see figure 5.4)

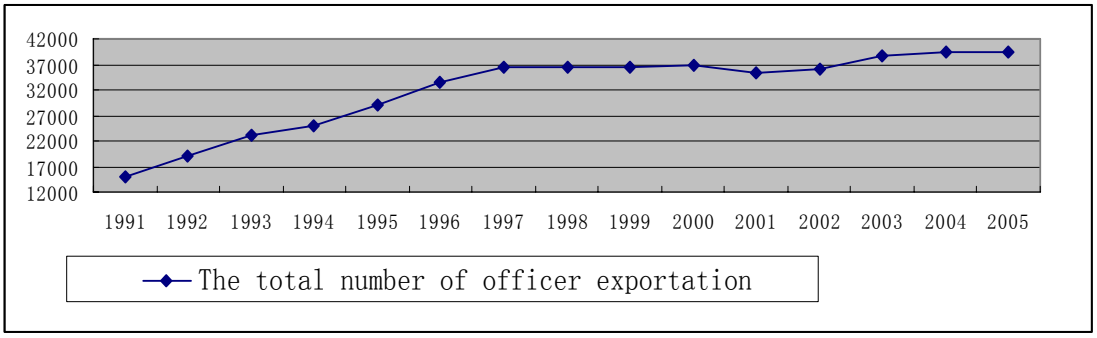

Figure 5.3 - The exportation of Chinese seafaring officers

Source: MOC, Department of Foreign Economic Cooperation (2006)

According to above statistics, make the exponent smooth model to predict the future demand of Chinese seafarer exportation, the result see table 5.4.

Table 5.4- List of calculation of exponent smooth model for international demand of officers

year	observe value	Predict value	St1	St2	a	b
1991	14890		19010	19010	19010	0
1992	18970		18974	18978	18970	-32
1993	23170	26523	22750	22373	23128	3396
1994	24860	26925	24649	24421	24877	2048
1995	28990	32690	28556	28142	28969	3721
1996	33500	37869	33006	32519	33492	4377
1997	36515	39809	36164	35800	36529	3280
1998	36368	36896	36348	36293	36402	493
1999	36479	36639	36466	36449	36483	156
2000	36684	36876	36662	36641	36684	192
2001	35320	34268	35454	35573	35336	-1068
2002	36001	36320	35946	35909	35984	336
2003	38548	40667	38288	38050	38526	2141
2004	39358	40452	39251	39131	39371	1081
2005	39320	39495	39313	39295	39331	164

$$F_{t+m} = 39331 + 164 \times m$$

Figure 5.4 shows the comparison between the observed values and predict values of

number of Chinese seafarer exportation. (see figure 5.4).

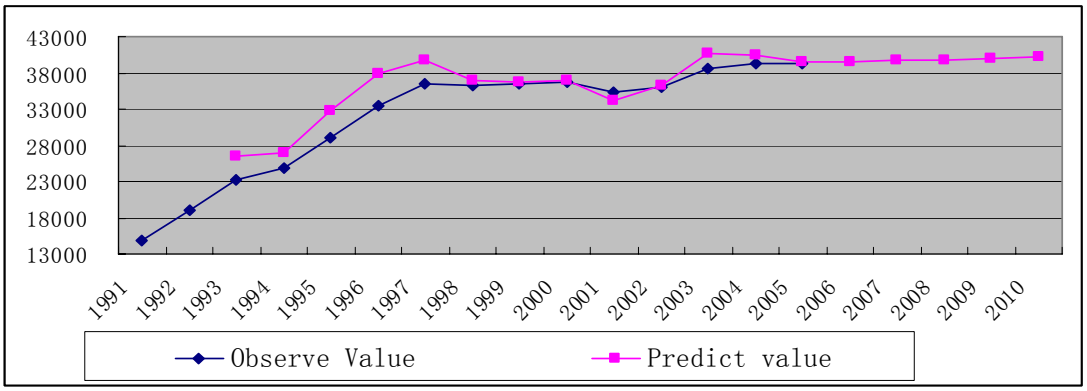

Figure 5.4- The comparison between the observed values and predict values of number of Chinese seafarer exportation.

The above demand prediction includes the marine officers and ratings. Taking actual operation into account, the Chinese seafarer exportation is mainly in the mode of "whole team" provision or "half team" provision and rarely in individual. (see table 5.3).

Table 5.5- The proportion of seafaring officers in the seafarer exportation

	Year	Ratings	Officers	The proportion of officer
Company A in Guangzhou	2002	1220	867	41.50%
	2003	1162	678	36.80%
	2004	1210	632	34.30%
	2005	1239	796	39.10%
Company B in Tianjing	2002	1136	605	34.80%
	2003	1269	811	39.00%
	2004	1347	659	32.90%
	2005	1223	732	37.40%
Company C in Dalian	2002	557	206	27.00%
	2003	537	253	32.00%
	2004	535	251	31.90%
	2005	593	275	31.70%
Average				34.90%

Source: the above manning companies.

Therefore, the proportion occupied by officers in seafarer exportation is stabilized at

35%. In addition, take the manning coefficient, loss coefficient and reserve coefficient in to account, the demand for officers should be as following table (see table 5.5).

Table 5.6- The predict value of officer exportation

Year	2006	2007	2008	2009	2010
Demand of officers	221179	22209	22301	22393	22485

5.4 The Utilization of Chinese Seafaring Officers

The future tendency of demand to Chinese officer is the combination of the demand of Chinese merchant fleet and officer exportation. Together with these two aspects, we can see the future demand of Chinese marine officers. (see table 5.6)

Table 5.7-The total demand of Chinese seafaring officer from 2006 to 2010

Year	The Native demand of officer	The Exportation demand of officer	Total
2006	32269	22117	54386
2007	33178	22209	55387
2008	34086	22301	56387
2009	34995	22393	57388
2010	35904	22485	58389

The prediction of Chinese seafarer only considers the demand from the vessel with more than 500 DWT. So, the actual demand of Chinese officers may be more than this prediction. According to the analysis of preceding chapters, the total number of Chinese officers is about 55,000 to 60,000 and there is no significant increase. So, this author believes that the Chinese officers are running at full capacity and can not offer a further increase in share of international seafarer market. There is an imbalance between the sustained growth demand and limited supply of officer. In the future, the author thinks such situation can lead to following changes in the Chinese officers market.

Firstly, the average working time for an officer on board will be more than 8 months

and the employers will encourage officers to work extra shifts to balance the problem of shortage. Actually, there are many officers who just work on board full year round.

Secondly, the great expansion taken place in Chinese SOE shipping companies will make some officers who are originally for labor exportation to flow back to Chinese national fleet. This author believes that it is the main reason why the Chinese seafarer exportation stopped to increase after recent years. Due to the loss of this part of officer resource, the Chinese seafarer exportation will not be stabilized in the level at present stage and may be decrease in the future.

Thirdly, because the Chinese national fleet can not enjoy the absolute priority in the distribution of Chinese officers, some Chinese shipping companies which are lack of power to control the resource of officers will face an absolute shortage of officers, especially for the relative minor private shipping companies.

Fourthly, for such shortage of resource of officer, both the SOE and private entities will enforce the control power to the officers. Such control usually is not legal and at least not polite, such as holding the certificates and key documents. This phenomenon is going against the competition between manning companies.

In summary, the general condition and the utilization of marine officers are not optimistic and we should take appropriate measures to deal with this problem.

CHAPTER 6 THE STRATEGY AND COUNTERMEASURE TO THE DEVELOPMENT OF CHINESE SEAFARING OFFICER MARKET

6.1 The Suggestions on Chinese Maritime Education Reformation

The Reformation of Chinese MET is the first step to establish a healthy seafarer market with an appropriate increase in the number of offices. On one hand, only by increasing the training capacity of officers and changing the imbalance of supply and demand of officers, China can guarantee the development of national fleet and promote the seafarer exportation simultaneously. On the other hand, this author also believes that by increase the training capacity we can improve the quality of cadets. Nowadays, because the shortage of cadets, every shipping or manning company just want to grasp every cadet available without any consideration of the academic records of them. They even do not like to enroll the cadets with good performance, because they tend to loss easily. As the experience of this author, there is no competition between cadets and the cadets in the marine school are not study very hard, comparing with the regular students in college.[19] This author thinks that if China can have enough training capacity to bring the competitive mechanism between cadets, the quality of them will be improved.

6.1.1 Reinforce the Direct Control and Administration to the MET

Before the year of 1999, the administration mode of Chinese METS is directly controlled and supervised by MCC and only with secondary support from local governments and shipping enterprises. The China maritime education system enjoyed a comprehensive and systematic support, which ranges from the special policy and appropriation to personal supervision, from MCC. However, with the step of education reformation, the Chinese MET institutions launched their reformation,

[19] As a student with 5-year's study in a maritime university, this author has deep impress of such situation. When the students of regular majors study very hard with consuming passion for the fear of uncertain future, there are very few cadets in the study room.

as a part of education system. The main marine schools and universities gradually severed their close links with the MCC and the administrative mode of Chinese METS change from one- tier mode to multi-tier.

There are 5 different administration modes for MET institution now. Maritime universities and schools are administrated by MCC, MOE, local governments and shipping enterprises respectively. (see figure 5 1). The most interesting thing is that the four main maritime universities (DMU, SMU[1], WTI and JMU) are controlled by four different administrative modes.

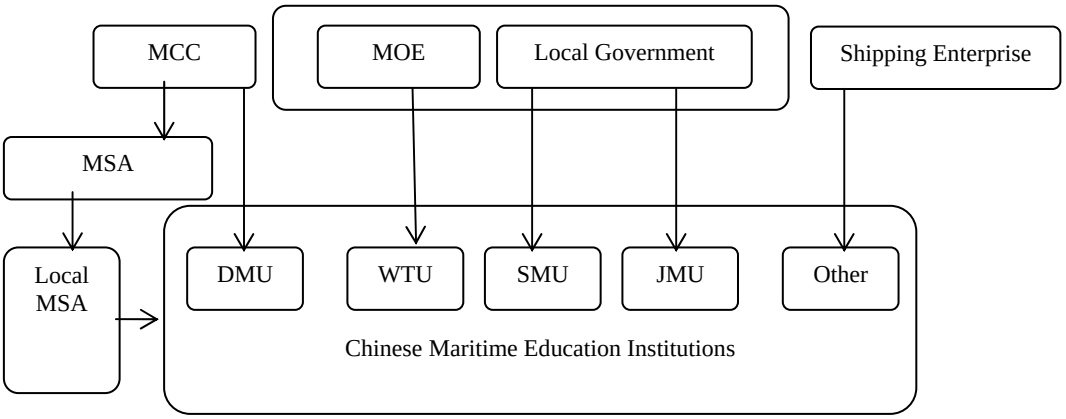

Figure 6.1-The administrative mode of China MET

The above administrative entities are not inter-dependent and have different goals and responsibilities. For example, the schools operated by shipping enterprises always depend on the need of the enterprise and the schools controlled by local government always have a passion on upgrading from “Colleges” to “Universities”.[2] This multi-tier administrative can also make the Chinese government difficult to know the actual condition of officer training capacity. The absence of coordination mechanism can be another problem. For example, the application to establish a maritime education institution should be examined and audited by MOE in

[1] The administrative mode of SMU is the combination of Shanghai government and MOE.
[2] In China, the status of “university” is superior to “college” in many aspects, such as reputation, appropriation and teaching quality.

audited by MOE in accordance with the provisions of *Higher Education Law of the People's Republic of China*. On the contrary, the examination of C.O.C is hold by MSA in accordance with the relevant international conventions. But, there is no a qualified or applicable quality system or mechanism for supervision or guidance between these two departments. Due to the high investment of equipment and teachers, it is impossible for a regular higher education institution to establish maritime education without proper directions. However, due to the high employment rate[1], some universities established maritime education blindly. Hainan University and Hebei University of Technology can be examples. In the 1990s, these two universities hold the majors of navigation and marine engineering. But, going with the full effect of STCW in China, these two universities hardly reach the compulsory standards and the passing rate for examination of C.O.C was not satisfied either. They finally stopped recruiting students for navigation and marine engineering in 2003. Such cases wasted much of money and education resources and reflect the drawback for the multi-tier administrative mode of maritime education.

In addition, the requirements of seafarer have been changed with the development of international regulations and application of new technology in shipping industry. Because the sensitivity to such development differs from different government department, the new requirements to seafarer can not be communicated or conveyed by such multi-tier administrative mode. And the sensitivity to the seafaring officer market of different departments is also different.

From the development of maritime education of other countries, the author finds that there are two kinds of maritime education system (see table 6.1). The most developed countries are inclinable to strictly control the maritime education which concerns national security and economic development. Except Japan, there rarely is overlap or multi-tier administration.

[1] The average employment rate for Chinese regular higher education is only 73% in 2005, but the employment rate for cadets from navigation school is almost 100%.

Table6.1 - List of administrative modes in various countries

Administrative mode	Relevant countries
Directly controlled by department of transportation	USA, France, Russia, Denmark, Norway, Australia
Mainly controlled by department of education and supported by department of transportation	Japan
Dirtily controlled by department of education	a smaller group of countries (on special maritime universities and the majors concerns maritime is hold by technology or engineering schools)

On the contrary, the main seafarer export countries, such as India and Philippine, most of marine schools are private school. The establishment of these private schools is often oriented by the market and the job for such schools is to training seafarers for international market and foreign exchange incomes.

China's reality is just in the middle of above two systems. But, as a country of the fourth biggest merchant fleet in the world and the high speed of economic development, the author believes that development should be closed to maritime developed countries in the future. What's more, the environment of China is not suitable for the development of private schools. The total number of private higher education institutions in China is only 1104 in 2005 and the education capacity is only 6% of total. Because, the quality of such private schools stays at a low level, they can hardly get the general social approval in the near future. So, taken the special features of maritime education into account, the author thinks that it is necessary for MCC to recovery the power to administration or, at least, reinforce the supervision from MCC to Chinese maritime education. That should be the first step for Chinese maritime education reformation.

6.1.2 Reformation of Structure of Education Funds of Chinese MET

For training an officer requires a huge investment. In fact, for 4-year University MET, the training of a cadet requires about RMB 100,000, including equipment depreciation (Sui Peiting 2000). Before 1999, the MCC provided most of this cost of

training. Now, with Chinese education reformation, the structure of education funds generally changed. As the principle of “who benefits, who pays the bill”, the education fund includes the tuition from cadets, the special appropriation from government and the “education compensation” from shipping enterprises and these three parties share the cost together. But there still are problems. Generally speaking, except for DMU, the tuition of MET is the half of other students. Taken the SMU as an example, the tuition of navigation school is RMB 2,500 per year. The special appropriation from MCC and MOE is RMB 7,200 per year per cadet. The “education compensation” from ship manning companies ranges from 10,000 to 20,000 per cadet depending on different enterprise. So, the education fund for training an officer in 4-year education is about RMB 56,000 to 66,000. Obviously, there is shortage of fund, especially for 4-year education. In other world, the more the cadets, the more the Chinese marine schools suffer. Actually, as the information this author gets, SMU needs to use a proportion of resource from regular education, such as tuition income of regular students and income from scientific research of national subjects, to compensate such shortage of fund every year. This situation makes the Chinese MET institutions hesitate to enlarge the enrollment scale. So, this author believes that we should change the structure of education funds of Chinese MET, as the following suggestions.

6.1.2.1 Changing the “Education Compensation” into “Cooperation” Between Marine Schools and Enterprise

“Education compensation” given by the shipping enterprise is necessary and reasonable. But the author thinks we also have room to improve this approach. The current situation is that shipping and manning companies just “buy” the cadets when they finish the college education and the “price” differs between different enterprises. Due to the marine schools can not control the future employers of cadets; they are inclinable to hesitate to enlarge enrollment scale. Because enlarging the enrollment scale may means the decreasing of employment rate and non-one-hundred-percent

employment rate means suffering loss. So, this author thinks that it is necessary to change such “education compensation” into a kind of investment. Because, there are always some large scale shipping enterprises and manning companies which need to recruit newcomers every year. Making the “education compensation” from “payable” to “prepayable” can be acceptable to them. The enterprise can “order” the cadets when they just entry to marine school and “prepay” the “education compensation” for one or more intakes. The marine schools can make enrollment plan according to the “order” from enterprises. The author believes such cooperation between marine school and enterprise can release the shortage of training capacity to some extant.

6.1.2.2 Increase the Tuition of Cadets

The original intention of low level of tuition for cadets is to encourage the youth to engage in the seafarering. But the negative effects of such are also obvious. On one hand, it imposes a financial burden to marine schools and it is unfavorable to the future development of marine schools. On the other hand, the low level of tuition encourages pursuing a degree from a good university, but on obtaining the degree the students wish to go for a shore job rather than becoming seafarers. When talking about the original intention of a cadet going to a marine school, many cadets just express: “not think too much, only because the low tuition” [1]. Actual, this embarrassment is contrary to the original intention of low tuition and should make the China MET to rethink. This author believes that the tuition of cadets should be the same as regular students, which can make a cadet to thinks more about whether he is willing to become a seafarer before he entry a marine school. Simultaneously, for the cadets who do have difficulty to afford the tuition, the marine schools can provide student loans and establish a scholarship system to support.

6.1.2.3 Estimation of the Cost of MET and Establish Reasonable Special Appropriation System

[1] Miao Shi and Hongjie Piao.2004. The embarrassment of maritime education. *MARITIME EDUCATION RESEARCH2004 (3).49*

The current special appropriation for MET has been used for 8 years and different marine schools have different situation, to confirm the actual training cost of different schools is necessary. Government department should involve in establishing new special appropriation system, according to the 4-year, 3-year and 2-year maritime education and increase the financial support appropriately. In addition, this author thinks it necessary to establish an adjustment mechanism to adjust the appropriation according to the performance of marine schools and the market.

6.1.3 Increase the Effective Training Capacity of Officer

The core issue of Chinese officer market is to increase the total number of officers to meet the Domestic and International demand.

6.1.3.1 Distinguishing Between the Functions of University and Non-university Maritime Education

In the 101 counties and regions, most of maritime education institutions are associate colleges or vocational schools and only a few of maritime university offer 4-year university education[1]. So, this author believes that the nature of MET is vocational education. In reality, the stability of non-university institutions is better than that of university institution and training cycle is relative short, this author believes that the future main force of seafaring officers should be concentrated the graduates from non-university institution.

For the aspect of 4-year university institutions, this author believes that the function of it should be to cultivate the future “shipping managers”, rather than seafaring

[1] Zhaolin Wu. (1996) The opinion about the differentiation between the specialties of navigation and marine engineering. *Maritime Education Research 1996 (1) 22*

officers. The Chinese maritime universities should realize the needs of students and increase the courses concerning law, business management and logistics management rather than mathematics, physics and principle of Mechanics. The courses the universities offered should be a good preparation for the future of cadets. It seems to go against the stability of cadets. But the example of Bremen University of Applied Science can be a good example. Before 1997, only less than 30% of cadets from Bremen University of Applied Science went for on board jobs, the rest mainly went to shore jobs and further education. But in the year of 1997, the university changed the curriculum system and added the course of law, business management and terminal management. Such approach attracts more and more students to receive maritime education and let the student see the bright future after they have some on board experience. Nowadays, although the average working life of cadets is only 5 years, there is 90% of cadets go to on board jobs. There is a new dynamic balance in the German officer team.

6.1.3.2 Enlarge the Enrollment Scale of the Cadets from West of China

According to the analysis in the 4th chapter, we can see that the stability of cadets and officers has great relationship with their residency. Just as the world seafarer market the main source of seafarer is shifting from West to the East, this author believes that China should take the same process. The main source of Chinese officers should shift from the Coastal cities to the West and from cities to the countries. Although it is an old subject, the reality is that the proportion of cadets from the inland provinces is not satisfied. For example, the proportion of cadets from inland provinces in SMU and DMU are 35% and 40% respectively, according to their enrollment plan of 2006 and the proportion of cadets from country side remains 50% for recent years. For associate colleges and vocational schools, they usually enroll cadets from neighboring areas. So, there are any few cadets from inland areas. With the high speed of economic development, the loss of officer in the coastal cities will be more serious in the future. The Chinese MET should realize this and change their mind and

be prepared for the time ahead.

6.2 Take Positive Measures to Reduce the Rate of Loss of Officer

6.2.1 Complete the Legislative Work of "Law of Seafarer" as soon as Possible to Protect the Personal Rights and Interests of the Seafaring Officers

Nowadays, group of the agent-tied officers and freemen become larger and larger, and this author believes they will become the main force of Chinese officers in the future. However, different from the officers of SOE shipping companies, they can hardly get the social welfare from the manning companies. What's more, if there is labor dispute or accident injury, the manning company will take no liability and show no willingness to help the seafarer. So, lack of sense of security can be the reason why they have high level loss rate comparing with the officers of SOE shipping companies.

At present, there is no special national law to regulate the seafarer. In the labor market, the only laws which can be applied to protect the right and interests of seafarers are the *Labor Law of the People's Republic of China* and *General Principles of the Civil Law of the People's Republic of China.* But, in the actual operation, these two laws can hardly protect the interest of seafarers, especially in seafarer exportation aspect. Because, on one hand, the relationship between seafarer and the manning companies is not employment relationship. The labor dispute arbitration committee[1] has on jurisdiction on that according to the *Labor Law*. To deal with this problem, the seafarer can only litigate with the manning company according the *General Principles of the Civil Law of the People's Republic of China.* That usually means a long haul and troubles, the seafarer often to renounce the legal right. On the other hand, due to the labor contract, the jurisdiction of dispute between seafarer and foreign employer usually locates in Hong Kong. That also means a long haul and

[1] Though the labor dispute arbitration committee to settles the labor dispute is the simplest way for employee and their employer. Usually, the committee consists the government officer and trade union officer.

troubles. So, the seafarers are always vulnerable group and lack the protection of law.

For the international regulations aspect, there are many relevant international conventions and regulations established by IMO. ILO and ITF to regulate the seafarer labor market, working conditions, wage, social welfare and security of persons. Although the Chinese government ratifies most of ILO conventions, the absence of relevant national law makes it difficult to implement such conventions.
So, this author believes that the Law of Seafarer which can regulate every aspect concerning right and interest of seafarer can be an efficient approach to reduce the loss of seafarer. The Chinese government should realize the serious condition of Chinese seafarer market to complete the legislative work of "law of seafarer" as soon as possible to protect the personal rights and interests of the seafaring officers and reduce the loss rate.

6.2.2 Increase the Wage of Chinese Officers

The reason why Chinese officers are so cheap, even in the environment of worldwide shortage of officers can be a long story. The current situation is that the wage of Chinese officers are not influenced by the supply and demand but decided by the wage table of SOE shipping companies. Actually, the officers working for SOE shipping companies enjoy a comprehensive welfare[1] besides their wage. But, for the manning companies, they do not need to burden such welfare, the only thing they need do is to raise a little bit to make the "net pay" more than that of SOE shipping company. That will attractive enough to the youth who do not want to be a life-long seafarer. That is a vicious competition and harms the interests of officer. To other side, the wage table of SOE companies has remained unchanged for a very long time. That is the why the wage of Chinese seafarers is so low.

[1] Such comprehensive welfare includes medical insurance, unemployment insurance, housing public fund, endowment insurance, trade union fund and education fund. The total can occupy 40% of total wage of officers.

So, this author believes that the only way to increase the wage of officers is to impose the compulsory measures to eliminate the difference of welfare between SOE shipping companies and manning companies. Or, we can authorize the SOE shipping companies to turn such comprehensive welfare to cash compensation.

In addition, the SOE shipping companies should realize that the important role they play in officer labor market and they can also be the victim of the decrease of officers. They should establish a mechanism to adjust the wage of officers to increase the wage of officers positively, which can be good for the stability of their officer team.

6.2.3 Establish the Seafarer Service Centre to Utilize the Officer Resource More Effectively

Just like the Chinese MET, the administration of the Chinese seafaring market is also multi-tier. The registration of officers is regulated by MSA; the immigration matters by Ministry of Public Security; the administration to manning company by Ministry of Commerce and so on. Even if this, there still is absence of information platform of officer supply and demand, the legal aid services and supervision to manning companies. These drawbacks make the Chinese officers can not be making full use of.

So, for the development of Chinese seafaring officer market, this author suggests to establish a public seafarer service centre to realize the nationwide registration of seafarers and build the database of seafarer information. Simultaneously, this service centre should contact with the employers in worldwide. The main functions of such service centre as follows:

- Comprehensive information service
- Registration of seafarer
- Dispute resolution and arbitration

- Legal add
- Issuance of information of supply and demand
- Education and training service
- Examination of C.O.C
- Immigration procedure
- Supervision to seafarer and manning companies

The above functions this author suggests can reduce the time for seafarer looking the employment and simplify the procedures.

CONCLUSION

The Chinese seafaring officer team is the core of Chinese merchant fleet. For the labor exportation, the Chinese seafarers just bring great wealth under the guidance of seafaring officers. In a word, the seafaring officers are precious treasure to China.

By data and statistic this author gets and the analysis of Chinese seafaring market basing on such data, we can see the current situation of Chinese seafaring market is that the training capacity is depleted by high level loss rate of officers. What's more, such situation of loss of officers will be serious in the future. Nowadays the utilization of seafaring officers is approaching to the utmost, due to such insufficient supplementary. We can see that the shortage of officer leads the enterprises enforce the control power to the officers, which is just against the nature of seafaring officer as a self-employed career. That is a vicious circle.

China may be in the turning point of seafarer market. With the economic development of China, we have not much lift. The Chinese seafaring officer market needs changes, reformations and even revolutionary measures to develop and improve.

But we should also be soberly aware that China has her advantage to develop seafaring officers as the most populous country in the world and rich source of human talents. So, this author believes that the future road of development of

Chinese seafaring officers may be tortuous but the future is still bright.

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