

MOORE MARITIME INDEX 2023

SHIPPING TRENDS BASED ON THE COUNTRY OF BUILT





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SHIPPING TRENDS BASED ON THE COUNTRY OF BUILT

INTRODUCTION

The Moore Maritime Index (MMI) report “Shipping Trends based on the Country of Built” focuses on studying the possible trends and correlations between “Country of Built” and operating expenses of the vessels. Collected data comes from more than 140 management companies which manage 1,500 vessels globally. The study concentrates on the dry cargo and tanker shipping sectors aiming at identifying possible relationships between the Country of Built and vessel operational performance. The analysis is based on 2022 data. Our report contains reliable data based on specific criteria that we believe are important and also ensure sufficient data depth on which to base our preliminary results. Our aspiration, however, is to act as a business companion, therefore we encourage our members to run their own data queries in Moore Maritime Index and seek information in order to obtain a more accurate view of the subject and gain further insights. See more information on how to access MMI at section 4, page 7.

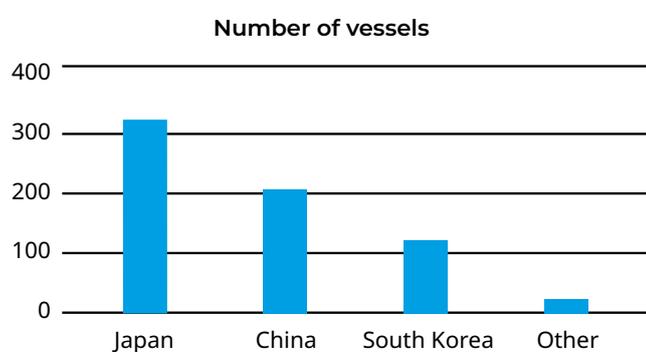
1. FOCUS ON BULK CARRIERS: INSIGHTS BASED ON COUNTRY OF BUILT AND OPERATING EXPENSES

A. Breakdown of the Countries of Built in MMI database

Data of more than 660 bulk carriers are included in our database at the time of this publication. The majority of these vessels (96%) are built in one of the three major shipbuilding countries of the world, namely China, Japan and South Korea.

Other Countries of Built reported for bulk carriers in the MMI database include Denmark, India, Indonesia, Philippines, Romania and Vietnam.

Table 1: Number of Vessels per Country of Built



Source: Moore Maritime Index

In the analysis that follows, our goal is to identify potential patterns between the country in which a vessel is built and the vessel's operating expenses.

Our analysis will concentrate on the three countries prevailing in our database: China, Japan and South Korea.

B. First look at the Total Operating Expenses per Country of Built

In 2022, Chinese vessels reported average daily operating expenses of \$6,625, Japanese vessels reported average daily operating expenses of \$6,377 and South Korean bulk carriers reported \$6,591 operating expenses per day.

C. Focus on Repairs and Maintenance and Spares per Country of Built

Total operating expenses comprise of crew wages and expenses, lubricants and stores, repairs and maintenance, spares, insurances and administrative expenses with management fees included. Some of

these categories are clearly unaffected by the Country of Built and depend on management decisions, as is the case of the choice of nationality of crew or the choice of the management fees level.

In the analysis that follows, we will focus on the "Repairs and Maintenance and Spares" category aiming at understanding whether there is a pattern based on the Country of Built or not.

As presented in Table 2, Japanese bulk carriers are reported to have the lowest average daily Repairs and Maintenance and Spares costs, with USD 816 per day. Vessels built in South Korea follow with USD 931 per day on average and finally vessels built in China perform with an average of USD 979 per day.

Table 2: Bulk Carriers' daily Repairs and Maintenance/ Spares per Country of Built

	Daily R&M and Spares	Daily R&M and Spares/Daily Opex
Japan	USD 816	13%
South Korea	USD 931	14%
China	USD 979	15%

Source: Moore Maritime Index

In the following analysis, we focus on the Panamax bulk carrier vessels, for which the MMI database has more than 330 vessels.

Table 3: Daily Repairs and Maintenance/ Spares for Panamax bulk carriers

Per Country of Built (Daily)	Daily R&M and Spares_Panamax	Daily R&M/Daily Opex ratio
Japan	USD 794	12%
South Korea	USD 812	13%
China	USD 948	14%

Source: Moore Maritime Index

In the Panamax sector, vessels built in China presented the highest daily Repairs and Maintenance and Spare expenses, followed by vessels built in South Korea. The lowest daily R&M and Spare expenses in the Panamax sector are reported in Japan amounting to \$794 for the year 2022.

D. Filtering data based on vessel “age”, “capacity” and S&P activity

Age and size are two of the most important parameters for understanding cost behaviour. In order to focus exclusively on the impact of the Country of Built on performance, we excluded these two factors and analysed the data of Panamax bulk carriers built between 2008 and 2017, excluding vessels above the age of fourteen (14) years and below the age of five (5) years old.

Additionally, we have excluded vessels which were either purchased or sold during the year and did not have a full trading year, as their costs may fluctuate significantly compared to other ships. The results are presented in Table 4 below.

Table 4: Daily Opex and R&M/Spares for vessels with
a) Full Trading Year,
b) Year built between 2008-2017 and
c) Type: Panamax

Per Country of Built (Daily)	Daily R&M and Spares	Daily OPEX	Daily R&M/ Daily Opex ratio
Japan	USD 773	USD 6,218	12%
South Korea	USD 810	USD 6,213	13%
China	USD 1,016	USD 6,649	15%

Source: Moore Maritime Index

As seen, the lowest operating expenses are reported in vessels built in South Korea, but the lowest R&M and Spares expenses are reported in vessels built in Japan. Vessels built in South Korea and Japan reported almost equal daily operating expenses, but Chinese vessels are reported to have the highest total opex in general as well as the highest repair and maintenance and spare costs per day.

E. Comparison with prior years

This section focuses on the vessel type of Panamax bulk carrier as well, built between 2008-2017 and with a full trading year, aiming at identifying trends based on the country of built that could be applicable over the last five years.

In the five-year comparison presented in Table 5, it can be observed that between 2018 and 2022, Japanese vessels reported the lowest daily R&M and Spares cost comparing to vessels built in South Korea and China for all five years under consideration.

Table 5: 5-year comparison_Daily Opex and R&M/Spares

Per Country of Built (Daily)		Daily OPEX	Daily R&M and Spares	Daily R&M/Daily Opex ratio
Japan	2022	USD 6,218	USD 773	12%
	2021	USD 6,067	USD 720	12%
	2020	USD 5,507	USD 603	11%
	2019	USD 5,253	USD 493	9%
	2018	USD 5,186	USD 448	9%
South Korea	2022	USD 6,213	USD 810	13%
	2021	USD 5,977	USD 784	13%
	2020	USD 5,586	USD 612	11%
	2019	USD 5,343	USD 671	13%
	2018	USD 5,320	USD 576	11%
China	2022	USD 6,649	USD 1,016	15%
	2021	USD 6,206	USD 887	14%
	2020	USD 5,581	USD 708	13%
	2019	USD 5,533	USD 705	13%
	2018	USD 5,371	USD 561	10%

Source: Moore Maritime Index



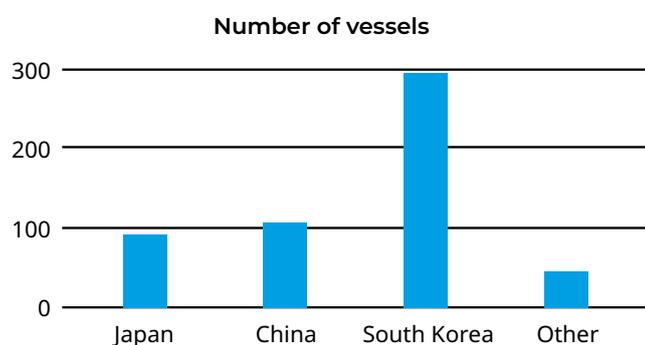
2. FOCUS ON TANKERS: INSIGHTS BASED ON COUNTRY OF BUILT AND OPERATING EXPENSES

A. Breakdown of the Countries of Built for tankers in MMI database

Data of more than 530 tankers are included in our database at the time of this publication. The majority of these vessels (92%) are built in South Korea, Japan and China thus our analysis will focus on these three countries.

Other Countries of Built reported in MMI for tankers include Croatia, Romania, Turkey and United Arab Emirates.

Table 6: Number of Tankers per Country of Built



Source: Moore Maritime Index

B. First look at the Total Operating Expenses and R&M and Spares Costs per Country of Built

As presented in Table 7 Chinese built tankers regardless of size and age seem to have the lowest daily operating expenses, amounting USD 7,294. South Korean tankers follow with USD 7,479 daily operating expenses and Japanese tankers with USD 7,646.

South Korean built vessels reported the highest daily Repairs and Maintenance and Spares costs, amounting to USD 982 per day, while Japanese and Chinese vessels follow with USD 926 and USD 890 per day respectively.

Table 7: Daily Opex and Repairs and Maintenance/ Spares for tankers

Per Country of Built (Daily)	Daily OPEX	Daily R&M and Spares	Daily R&M/ Daily Opex ratio
China	USD 7,294	USD 890	12%
South Korea	USD 7,479	USD 982	13%
Japan	USD 7,646	USD 926	12%

Source: Moore Maritime Index

C. Filtering data based on vessel "age", "capacity" and S&P activity

In this section, we have excluded the factors of age and capacity, as well as the vessels purchased or sold during the year 2022.

The analysis here focuses on Aframax tanker vessels (80,000 dwt - 120,000 dwt) having full trading year, built between 2006 and 2017.

Table 8: Daily Opex and R&M/Spares for vessels with a) Full Trading Year, b) Year built between 2006-2017 and c) Type: Aframax

	Daily OPEX	Daily R&M and Spares	Daily R&M and Spares/Daily Opex
South Korea	USD 7,497	USD 1,028	14%
China	USD 7,471	USD 1,081	14%
Japan	USD 8,012	USD 957	12%

Source: Moore Maritime Index

As shown in Table 8, China built vessels are reported to have the lowest total Operating Expenses, but at the same time they reported the highest daily Repairs and Maintenance and Spares costs.

Japanese built vessels reported the lowest daily Repairs and Maintenance and Spares costs, with USD 957 per day, while South Korean follow with USD 1,028.

D. Comparison with prior years

This section focuses on the vessel type of Aframax tankers as well, built between 2006-2017 and with a full trading year, aiming at identifying trends based on the country of built that could be applicable over the last five years.

Table 9: 5year comparison_Daily Opex and R&M/Spares

Per Country of Built (Daily)	Daily OPEX	Daily R&M and Spares	Daily R&M and Spar/Opex ratio	
South Korea	2022	USD 7,497	USD 1,028	14%
	2021	USD 6,777	USD 784	12%
	2020	USD 6,815	USD 857	13%
	2019	USD 6,933	USD 908	13%
	2018	USD 6,695	USD 839	13%
Japan	2022	USD 8,012	USD 957	12%
	2021	USD 8,043	USD 934	12%
	2020	USD 7,660	USD 881	12%
	2019	USD 7,508	USD 756	10%
	2018	USD 7,251	USD 698	10%
China	2022	USD 7,471	USD 1,081	14%
	2021	USD 6,909	USD 917	13%
	2020	USD 7,506	USD 1,311	17%
	2019	USD 7,388	USD 1,053	14%
	2018	USD 7,317	USD 1,347	18%

Source: Moore Maritime Index



Total daily opex were lower for the South Korean vessels for the years 2018-2021, but in 2022 the Chinese vessels reported the lowest opex.

Looking specifically at repairs, maintenance and spares costs, the Japanese vessels reported the lowest cost in 2022.

3. PATTERNS & INSIGHTS

The purpose of the present analysis is a kick-off of understanding the cost behaviour of vessels during their entire operating life. Factors, such as human resources skills, unforeseen events and strategic alliances have an effect on companies' operating cost performance. Here we have used data for the period of 2018-2022 aiming at understanding the role of country of built in the Repairs and Maintenance and Spares cost category. Based on available data, the country of built seems to play a role on the vessels' operating expenses on a daily basis.

Concluding, MMI data indicate the following:

- **For bulk carriers, the Japanese vessels reported lower daily total operating expenses and lower**

4. VISIT MOORE MARITIME INDEX TO INVESTIGATE MORE AND SHARE YOUR MMI EXPERIENCE

Moore Maritime Index (MMI) is a statistical and analytics tool on shipping operating costs and revenues of 1,500 vessels. We extract our data from the financial statements of ship-owning companies audited by Moore Global member firms, as well as from verifiable independent submissions from all around the world.

Overall, the costs for repairs, maintenance and spares have increased in 2022 compared to 2021, independent on the country of built, but the highest increase was reported in the South Korean vessels. This appears to be the reason why the South Korean vessels lost their first place to Japanese vessels in 2022.

daily R&M and Spares compared to vessels built in China and South Korea. The same was observed in all years from 2018 to 2022.

- **For tankers in 2022, the Japanese vessels reported the lowest daily R&M and Spares cost. South Korean vessels reported the highest increase in these expenses categories, compared to the increase in vessels built in other countries, therefore in 2022 these vessels lost the first place they held in 2021.**

We are closely monitoring how these preliminary observations evolve over time and we will share our updates in the near. We would be delighted to receive your feedback and requests, which we hope to incorporate in our future reports.

Analysis on Operating Expenses is available on the Moore Maritime Index platform. You are welcome to investigate further this analysis on the following link:

<https://www.moore-index.com>

We also encourage our members to run their own data queries, look for interesting themes and share them with us at mmi@moore.gr

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