



MOORE

MOORE MARITIME INDEX 2022

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 150 management companies which manage more than 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 2021 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. 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 at section 4, page 7.

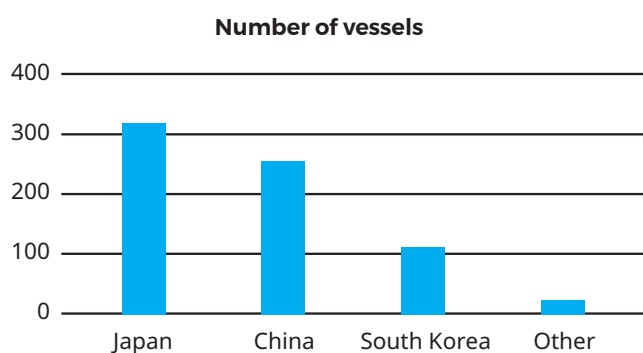
1. FOCUS ON BULK CARRIERS: INSIGHTS BASED ON COUNTRY OF BUILT AND OPERATING EXPENSES

A. Breakdown of the Countries of Built in MMI database

Data of more than 730 bulk carriers are included in our database at the time of this publication. The majority of these vessels (97%) 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 that prevail in our database: China, Japan and South Korea.

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

In 2021, Chinese vessels reported average daily operating expenses of \$6,149, Japanese vessels reported average daily operating expenses of \$5,996 and South Korean bulk carriers reported \$6,182 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 716 per day. Vessels built in South Korea follow with USD 800 per day on average and finally vessels built in China perform with an average of USD 838 per day.

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

Fleet Size	Daily R&M and Spares
Japan	USD 716
South Korea	USD 800
China	USD 838

Source: Moore Maritime Index

Similar picture is presented in the different vessel types, namely Handysize vessels (10,000 dwt - 40,000 dwt), Handymax vessels (40,000 dwt - 60,000 dwt), Panamax vessels (60,000 dwt - 125,000 dwt) and Capesize vessels (more than 125,000 dwt).

Table 3 below shows the results for Panamax and Capesize Bulk Carriers, for which the MMI database has more than 400 vessels.

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

Per Country of Built (Daily)	Daily R&M and Spares_Panamax	Daily R&M and Spares_Capesize
Japan	USD 715	USD 979
South Korea	USD 785	USD 992
China	USD 747	USD 1,340

Source: Moore Maritime Index

In both Panamax and Capesize categories, vessels built in Japan reported the lowest daily R&M and Spare expenses. In the Panamax sector, vessels built in South Korea presented the highest daily R&M and Spare expenses, while in the Capesize sector, vessels built in China presented the highest daily R&M and Spare expenses.

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.

Additionally, we have excluded vessels which were either purchased or sold during 2021 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
Japan	USD 720	USD 6,067
South Korea	USD 784	USD 5,977
China	USD 887	USD 6,206

Source: Moore Maritime Index

As seen, the lowest operating expenses and R&M and Spares expenses are reported in vessels built in Japan. Chinese vessels are reported to have 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 four years.

In the four-year comparison presented in Table 5, it can be observed that between 2018 and 2021, Japanese vessels reported the lowest daily total operating expenses and the lowest daily R&M and Spares cost comparing to vessels built in South Korea and China.

Table 5: 4-year comparison_Daily Opex and R&M/Spares

Per Country of Built (Daily)		Daily OPEX	Daily R&M and Spares
Japan	2021	USD 6,067	USD 720
	2020	USD 5,507	USD 603
	2019	USD 5,253	USD 493
	2018	USD 5,186	USD 448
South Korea	2021	USD 5,977	USD 784
	2020	USD 5,586	USD 612
	2019	USD 5,343	USD 671
	2018	USD 5,320	USD 576
China	2021	USD 6,206	USD 887
	2020	USD 5,581	USD 708
	2019	USD 5,533	USD 705
	2018	USD 5,371	USD 561

Source: Moore Maritime Index



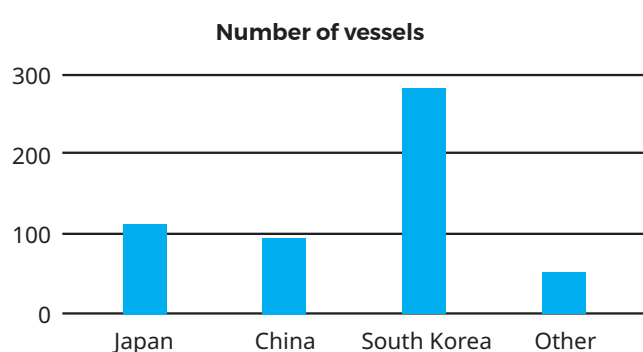
2. FOCUS ON TANKERS: INSIGHTS BASED ON COUNTRY OF BUILT AND OPERATING EXPENSES

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

Data of more than 540 tankers are included in our database at the time of this publication. The majority of these vessels (91%) 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, Ukraine 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 6,764. South Korean tankers follow with USD 7,155 daily operating expenses and Japanese tankers with USD 7,381.

South Korean built vessels reported the highest daily Repairs and Maintenance and Spares costs, with USD875 per day, while Chinese and Japanese vessels follow with USD841 and USD821 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
China	USD 6,764	USD 841
South Korea	USD 7,155	USD 875
Japan	USD 7,381	USD 821

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 2021.

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
South Korea	USD 6,777	USD 784
China	USD 6,909	USD 917
Japan	USD 8,043	USD 934

Source: Moore Maritime Index

As shown in Table 8, South Korean built vessels are reported to have the lowest total Operating Expenses, USD 6,777, Chinese and Japanese vessels follow with USD 6,909 and USD 8,043 daily Opex respectively.

South Korean built vessels reported the lowest daily Repairs and Maintenance and Spares costs, with USD 784 per day, while Chinese and Japanese vessels follow with USD 917 and USD 934 per day respectively.

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 four years.

Throughout the 4-year period, vessels built in South Korea reported the lowest total operating expenses per day and the lowest Repairs and Maintenance and Spares expenses.

Table 9: 4year comparison_Daily Opex and R&M/Spares

Per Country of Built (Daily)		Daily OPEX	Daily R&M and Spares
South Korea	2021	USD 6,777	USD 784
	2020	USD 6,815	USD 857
	2019	USD 6,933	USD 908
	2018	USD 6,695	USD 839
Japan	2021	USD 8,043	USD 934
	2020	USD 7,660	USD 881
	2019	USD 7,508	USD 756
	2018	USD 7,251	USD 698
China	2021	USD 6,909	USD 917
	2020	USD 7,506	USD 1,311
	2019	USD 7,388	USD 1,053
	2018	USD 7,317	USD 1,347

Source: Moore Maritime Index



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 2018-2021 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, Japanese vessels reported lower daily total operating expenses and lower daily R&M and Spares compared to vessels built in China and South Korea.**
- **For tankers, South Korean vessels reported the lowest daily total operating expenses and the lowest daily R&M and Spares cost, compared to vessels built in Japan and China.**

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.

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 more than 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.

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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