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MOORE MARITIME INDEX 2021

SHIPPING TRENDS BASED ON THE FLEET SIZE

INDEX

Disclaimer

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INTRODUCTION

The Moore Maritime Index (MMI) report on “Shipping Trends based on Fleet Size” focuses on studying the possible trends and correlations between “fleet size” and other shipping factors, such as operating expenses, net income, vessel age and capacity. For the purposes of this report, fleet size is defined as the total number of vessels managed by a single management company.

Collected data comes from more than 130 management companies which manage more than 1,500 vessels globally. Data is grouped under four categories based on fleet size under management:
1-5 vessels, 6-10 vessels, 11-20 vessels, more than 20 vessels.

The study concentrates on the dry cargo and tanker shipping sectors aiming at identifying possible relationships between fleet size and vessel operational performance. The analysis is based on 2020 data.

Our report contains reliable data based on specific criteria we consider of importance and ensure sufficient data depth on which our preliminary results are based. 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 on the topic and gain further insights. See more information at section 6, page 9.

1. FLEET SIZE AND AVERAGE AGE

Table 1 presents the average age of vessels per fleet size as in December 31, 2020.

In the bulk carrier sector, vessels managed by a) companies of 1-5 vessels have average age of 11 years, b) companies of 6-10 vessels have average age of 10 years, c) companies of 11-20 vessels have average age of 10 years and d) companies of more than 20 vessels have average age of 8 years.

In the tanker sector, vessels managed by a) companies of 1-5 vessels have average age of 13 years, b) companies of 6-10 vessels have average age of 9 years, c) companies of 11-20 vessels have average age of 10 years and d) companies of more than 20 vessels have average age of 9 years.

Table 1: Average vessel age per fleet size

Fleet Size	Average Age Bulk Carriers	Average Age Tankers
1-5 vessels	11 years	13 years
6-10 vessels	10 years	9 years
11-20 vessels	10 years	10 years
> 20 vessels	8 years	9 years

Source: Moore Maritime Index

2. FLEET SIZE AND AVERAGE CAPACITY

Table 2 presents the average vessel capacity per fleet size illustrating the concentration of large-capacity ships in management companies with large fleets.

In the bulk carrier sector, management companies with fleets of up to 20 vessels have an average vessel capacity between 56,000 and 82,000 dwt, but when the fleet exceeds 20 vessels, the average capacity increases to 88,445 dwt.

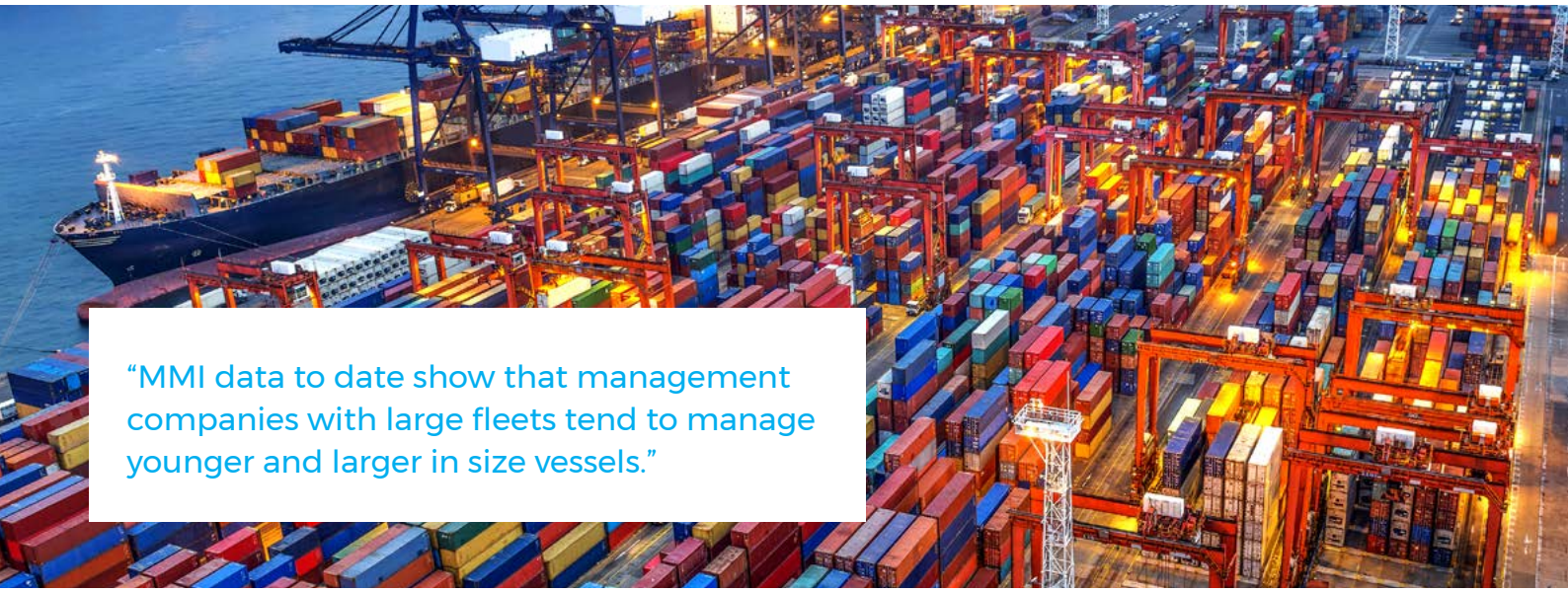
In the tanker sector, management companies with fleets of up to 20 vessels have an average vessel capacity between 51,000 and 64,000 dwt, but when the fleet exceeds 20 vessels, the average capacity skyrockets to 97,615 dwt.

Table 2: Average vessel capacity per fleet size

Fleet Size	Average Capacity Bulk Carriers	Average Capacity Tankers
1-5 vessels	56,374 dwt	51,722 dwt
5-10 vessels	81,229 dwt	55,420 dwt
10-20 vessels	66,583 dwt	63,639 dwt
> 20 vessels	88,445 dwt	97,615 dwt

Source: Moore Maritime Index

Management companies with fleets of more than 20 vessels tend to manage larger vessels.



"MMI data to date show that management companies with large fleets tend to manage younger and larger in size vessels."

3. DRY CARGO SECTOR

General Overview

The highest Time Charter Equivalent (TCE) in the dry cargo sector is observed in fleets of 6 - 10 vessels. Fleets of 6-10 vessels earned on average $10,131 per day, followed by fleets of more than 20 vessels which earned on average $9,923 per day.

As far as Operating Expenses (OpEx) are concerned, companies managing between 11 and 20 vessels report the lowest average daily expenses of $5,473 per day. Management companies with more than 20 vessels under management however, report the highest average daily operating expenses of $5,973 per day.

The optimal TCE to OpEx ratio appears in management companies managing between 6 and 10, achieving a ratio of 1.76. TCE to OpEx ratio shows how many times the time charter equivalent earned covers the operating expenses of the vessel.

Table 3: Bulk Carriers Operating Performance per Fleet Size

By fleet size (Daily)	1-5 vessels	6-10 vessels	11-20 vessels	>20 vessels
Time Charter Equivalent (TCE)	$7,305	$10,131	$8,489	$9,923
Operating Expenses (OpEx)	$5,554	$5,761	$5,473	$5,973
TCE to OpEx ratio	1.32	1.76	1.55	1.66

Source: Moore Maritime Index

Filtering data based on "age" and "capacity"

Since age and size are two of the most important parameters for the cost and income behaviour, in order to focus exclusively on the impact of fleet size on performance we excluded these factors and analysed the data of specific vessel types.

i) Vessels with capacity between 40,000 dwt and 70,000 dwt and average age between 10 and 14 years old

We have focused on the vessels with capacity between 40,000 dwt and 70,000 dwt and age between 10 and 14 years old in order to examine whether or not the results presented in the 2019 survey continue to apply in the survey of 2021 as well.

The relevant results are presented in Table 4.

Table 4: Bulk Carrier built 2006-2010 with capacity 40,000 dwt - 70,000 dwt - Operating Performance per Fleet Size

By fleet size (Daily)	1-5 vessels	6-10 vessels	11-20 vessels	>20 vessels
Time Charter Equivalent (TCE)	$7,230	$8,137	$6,403	$8,052
Operating Expenses (OpEx) (*)	$5,802	$6,146	$6,083	$6,370
TCE to OpEx ratio	1.25	1.32	1.05	1.26
Crew costs	$2,833	$2,730	$2,864	$3,178
Stores	$672	$838	$630	$783
R & M	$966	$1,068	$941	$1,009
Insurance	$443	$410	$486	$340
Administration	$888	$1,100	$1,163	$1,060
Age (AVG) at 2020	11.24	11.71	11.00	11.33
Capacity (AVG)	56,447	55,950	56,688	55,404

Source: Moore Maritime Index
(Filters: Year Built 2006-2010, Capacity 40,000-70,000 dwt)

The highest daily operating expenses are reported in fleets managing more than 20 vessels, amounting $6,370 per day, while fleets of 1-5 vessels, present the lowest average operating expenses, namely $5,802 per day.

Fleets of 6-10 vessels present the highest average TCE, amounting to $8,137 per day while fleets of 11-20 vessels present the lowest average TCE.

Vessels belonging in fleets of 6-10 vessels present the best TCE to OPEX ratio, achieving a score of 1.32.

Operating expenses do not decrease as fleet size increases, as traditionally hypothesised. Additionally, fleets of more than 20 vessels report the lowest daily insurance expenses and the highest daily crew expenses. Fleets of more than 6 vessels have administration expenses of more than $1,000 per day.

ii) Vessels with capacity between 60,000 dwt and 120,000 dwt with average age between 3 to 10 years,

Here we analyse vessels with capacity between 60,000 dwt and 120,000 dwt built between 2010 and 2017, in order to extend our research in a query where the MMI database encapsulates more than 200 vessels.

The relevant results are presented in Table 5.

The optimum TCE to OpEx ratio is achieved by vessels belonging in fleets of 6-10 vessels.

Again, it can be clearly observed that operating expenses do not decrease as fleet size increases and there is not a linear relationship between the two.

The lowest daily insurance costs are reported in larger fleets, while the highest crew costs and R&M expenses are presented in fleets of more than 20 vessels.

Fleets between 6 and 10 vessels present the highest average TCE, reaching $9,606 per day, while fleets between 1 to 5 vessels present the lowest TCE, in the range of $8,480 per day.

Table 5: Panamax Bulk Carrier Operating Performance built between 2010 and 2017

By fleet size (Daily)	1-5 vessels	6-10 vessels	11-20 vessels	>20 vessels
Time Charter Equivalent (TCE)	$8,480	$9,606	$9,390	$9,206
Operating Expenses (OpEx) (*)	$5,790	$5,569	$5,573	$5,600
TCE to OpEx ratio	1.46	1.72	1.68	1.64
Crew costs	$3,046	$2,869	$3,047	$3,050
Stores	$607	$537	$568	$573
R & M	$595	$616	$639	$655
Insurance	$431	$426	$316	$273
Administration	$1,110	$1,122	$1,001	$1,048
Age (AVG) at 2020	7.10	7.17	5.57	5.41
Capacity (AVG)	72,597	76,491	75,410	74,324

Source: Moore Maritime Index (Filters: Year Built 2010-2017, Capacity 60,000-120,000 dwt)

COMPARISON WITH PRIOR YEARS IN THE DRY CARGO SECTOR

This study concentrates on identifying trends based on the fleet size that are applicable over the last three years.

Tables 6, 7 and 8 below, present OpEx related figures between 2018 and 2020:

Table 6: 3-year comparison Bulk Carrier built 2010-2017 with capacity 60,000 dwt - 120,000 dwt - Operating Expenses per Fleet Size

By fleet size (Daily)	1-5 vessels	6-10 vessels	11-20 vessels	>20 vessels
OpEx 2020	$5,790	$5,569	$5,573	$5,600
OpEx 2019	$5,374	$5,253	$5,394	$5,521
OpEx 2018	$5,348	$4,961	$5,236	$5,512

Source: Moore Maritime Index

In the three-year comparison, it can be observed that operating expenses do not necessarily decrease as fleet size increases.

Initially, as the fleet size increases, the total operating expenses decrease, but as the fleet size continues to grow, the operating expenses increase again.

Additionally, a general increase in the daily operating expenses of bulk carriers in all fleet sizes is reported since 2018.

Table 7 shows that fleets with 6-10 and 11-20 vessels achieved better TCE to OpEx, for each of the years under examination.

Table 7: 3 year comparison Bulk Carrier built 2010-2017_with capacity 60,000-120,000 dwt – TCE to Opex per Fleet Size

By fleet size (Daily)	1-5 vessels	6-10 vessels	11-20 vessels	>20 vessels
TCE to OpEx 2020	1.46	1.72	1.68	1.64
TCE to OpEx 2019	1.95	2.07	2.08	2.01
TCE to OpEx 2018	2.01	2.24	2.34	2.22

Source: Moore Maritime Index

Table 8: 3 year comparison Bulk Carrier_built in 2006-2010_average capacity 40,000-70,000 dwt – Opex Categories per Fleet Size

By fleet size (Daily)		1-5 vessels	6-10 vessels	11-20 vessels	>20 vessels
Crew costs	**2020**	$3,046	$2,869	$3,047	$3,050
	2019	$2,797	$2,683	$2,891	$3,016
	2018	$2,777	$2,566	$2,879	$3,046
Stores	**2020**	$607	$537	$568	$573
	2019	$566	$568	$625	$589
	2018	$568	$505	$561	$583
R & M	**2020**	$595	$616	$639	$655
	2019	$629	$630	$570	$679
	2018	$559	$548	$507	$571
Insurance	**2020**	$431	$426	$316	$273
	2019	$389	$371	$333	$273
	2018	$416	$369	$308	$276
Administration	**2020**	$1,110	$1,122	$1,001	$1,048
	2019	$994	$1,001	$975	$963
	2018	$1,028	$973	$983	$1,044

Source: Moore Maritime Index

4. TANKER SECTOR

General Overview

Table 9 summarizes the results on tanker vessels, based on fleet size.

The average daily TCE for tankers, regardless of the sector they operate, is reported between $14,000 and $27,000. The lowest TCE is reported by management companies managing fleets between 1 and 5 vessels, averaging $14,790 per day and the highest TCE is reported by companies with more than 20 vessels, reaching $26,273.

The lowest daily operating expenses are reported by fleets between 11 and 20 vessels and the highest operating expenses are reported by fleets of 6-10 vessels.

Table 9: Tanker Operating Performance per Fleet Size

By fleet size (Daily)	1-5 vessels	6-10 vessels	11-20 vessels	>20 vessels
Time Charter Equivalent (TCE)	$14,790	$17,709	$16,475	$26,273
Operating Expenses (OpEx)	$6,931	$7,001	$6,476	$6,914
TCE to OpEx ratio	2.13	2.53	2.54	3.80

Source: Moore Maritime Index

Fleets of more than 20 tankers achieve the best financial performance based on the TCE to OpEx ratio (3.80), while companies managing 1-5 tankers achieve the lowest "TCE to OpEx" ratio (2.13).

In the following analysis, we have excluded the parameters of age and size to study how operating cost and income behaviour interrelate with fleet size.

Filtering data based on "age" and "capacity"

Tankers with an average age between 8 and 14 years and average capacity of about 50,000 dwt are presented here, in order to examine the financial performance for different fleet sizes based on specific age and capacity characteristics.

The results are illustrated in Table 10.

Table 10: Operating Performance for Tankers of 40,000dwt - 60,000dwt and between 8 and 14 years old

By fleet size (Daily)	1-5 vessels	6-10 vessels	11-20 vessels	>20 vessels
Time Charter Equivalent (TCE)	$11,606	$14,062	$10,279	$14,105
Operating Expenses (OpEx)(*)	$6,433	$6,621	$6,384	$6,636
TCE to OpEx ratio	1.80	2.12	1.61	2.13
Crew costs	$3,678	$3,841	$3,425	$3,790
Stores	$547	$635	$529	$663
R & M	$725	$737	$1,163	$897
Insurance	$456	$329	$438	$307
Administration	$1,026	$1,079	$829	$999
Age (AVG) at 2020	11.70	11.50	10.86	11.45
Capacity (AVG)	45,859	47,531	46,981	48,381

Source: Moore Maritime Index
(Filters: Year Built 2006-2012, Capacity 40,000-60,000 dwt)

Tankers belonging to fleets between 11 and 20 vessels seem to achieve the most favourable level of operating costs, while vessels belonging to larger fleets have the highest daily operating costs.

Fleets of more than 20 tankers also achieve the best average TCE, reaching $14,105, while companies managing 11-20 tankers achieve the lowest average TCE, reaching $10,279.

"There is no clear evidence that operating expenses, in total, decrease as fleet size increases although we can observe trends in certain categories. Factors, such as human resources skills, unforeseen events and profit margin goals, have an effect on companies' operating cost performance"

(*) Total Opex does not equal to the sum of the sub-categories. All values have been calculated independently for each sub-category, based on the data we hold. Therefore, the calculations for each sub-category and the total Opex category are based on their independent samples.

COMPARISON WITH PRIOR YEARS IN TANKER SECTOR

This section concentrates on identifying trends based on the fleet size for the tanker sector which are applicable over the last three years.

Table 11: 3-year comparison Tanker built in 2006-2012_average capacity 40,000-60,000 dwt - Operating Expenses per Fleet Size

By fleet size (Daily)	1-5 vessels	6-10 vessels	11-20 vessels	> 20 vessels
OpEx 2020	$6,433	$6,621	$6,384	$6,636
OpEx 2019	$6,343	$6,741	$5,755	$6,650
OpEx 2018	$6,002	$6,921	$6,424	$6,691

Source: Moore Maritime Index

Throughout the 3-year period, fleets of more than 20 vessels reported higher operating expenses than fleets with 11-20 vessels.

Table 12: 3-year comparison for Tankers built 2006-2012 with capacity 40,000 dwt - 60,000 dwt – TCE to Opex per Fleet Size

By fleet size (Daily)	1-5 vessels	6-10 vessels	11-20 vessels	> 20 vessels
TCE to OpEx 2020	1.80	2.12	1.61	2.13
TCE to OpEx 2019	1.89	1.97	2.30	1.97
TCE to OpEx 2018	1.73	1.74	1.80	1.42

Source: Moore Maritime Index

In 2020, the best TCE to OpEx is achieved by vessels belonging in fleets of more than 20 vessels, whereas in 2018 and 2019 the best combination of operating expenses and income was reported by fleets of 11 to 20 vessels.

Costs for scaling-up operations do not show a linear trend.

Table 13: 3-year comparison Tanker built 2006-2012 with capacity 40,000 dwt - 60,000 dwt - Opex categories per Fleet Size

By fleet size (Daily)		1-5 vessels	6-10 vessels	11-20 vessels	>20 vessels
Crew costs	**2020**	$3,678	$3,841	$3,425	$3,790
	2019	$3,611	$3,796	$3,490	$3,715
	2018	$3,666	$3,678	$3,790	$3,872
Stores	**2020**	$547	$635	$529	$663
	2019	$486	$783	$473	$664
	2018	$484	$768	$590	$655
R & M	**2020**	$725	$737	$1,163	$897
	2019	$749	$714	$846	$944
	2018	$575	$1,057	$825	$924
Insurance	**2020**	$456	$329	$438	$307
	2019	$522	$300	$373	$293
	2018	$559	$309	$256	$308
Administration	**2020**	$1,026	$1,079	$829	$999
	2019	$976	$1,147	$573	$1,034
	2018	$717	$1,108	$962	$1,006

Source: Moore Maritime Index

Certain trends can be observed throughout the years. Vessels belonging in fleets of more than 20 vessels presented the lowest insurance expenses. Crew expenses also increase as the fleet size increases from 11-20 vessels to more than 20 vessels.

5. INSIGHTS

The following observations are applicable for our dataset which provide insights on how expenses and income behave as fleet size varies.

MMI data to date indicate the following:

- Average managed capacity appears to be significantly higher in fleets of more than 20 vessels.
- Larger fleets tend to manage younger vessels.
- There is no indication that operating expenses, decrease as fleet size increases.
- We can observe trends in certain cost categories. For example, insurance expenses tend to be lower in large fleets and at the same time crew expenses and R&M expenses appear to be relatively high in fleets of more than 20 vessels.
- Costs for scaling-up operations do not move in a linear manner.
- Fleets of more than 20 vessels tend to be more stable and present relatively low volatility in the operating expenses over the years

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

6. 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 and Revenues per Fleet Size 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/insights/byFleetSize

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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