



U.S. Department of Transportation
Maritime Administration

Industry Survey Series: Mainstream Container Services 2003



**Industry Survey Series
Mainstream Container Services
2003**

June 2004

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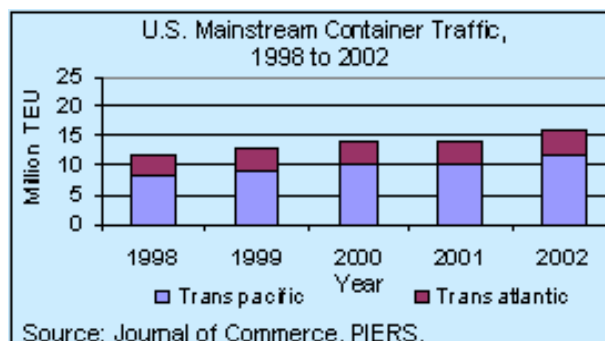
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Introduction

The following report summarizes data collected in a survey of the principal container carriers serving mainstream U.S. transatlantic and transpacific trades. The information collected focuses on how services are evolving, port performance and where service improvements and investment focus are needed and expected in these trades.¹ Responses were received from 21 of the 22 carriers (respondents) serving the trades.

The objective of the Maritime Administration (MARAD) survey was to learn more about the container segment of the maritime industry and the critical issues it faces, and to obtain important information that is not available from existing data. Sidebars are used throughout the report to present salient data that was not collected as part of the survey but which can provide the reader with background information relevant to the survey.²

For example, information available to MARAD indicates that over the last four years the U.S. mainstream container traffic has been growing at an annual rate of 7 percent and reached 15.6 million TEU's in 2002 (Sidebar 1). Respondents accounted for 93 percent of the mainstream containership traffic in 2002.



Sidebar 1

With valuable input and advice from Christopher Koch, Donald O'Hare and Robert Blair of the World Shipping Council, the survey was designed by staff of MARAD's Office of Statistical and Economic Analysis and its market research consultant Market Scope, Inc. Additional content guidance on the questionnaire was provided by Dr. Martin Stopford of Clarkson's Research, Jane Boyes of *Containerization International* and Dr. Wayne Talley and Bill Daniels of Old Dominion University. The questionnaire is attached as Appendix A.

MARAD is grateful to the respondents for their assistance.

¹In order to facilitate graphic presentation of the answers to several of the comparison questions, a numeric value was assigned to each "better," "same" or "worse" response and the average values of the responses are shown in the graphic.

²Container capacity or traffic data shown in the side bars are expressed in 20 feet equivalent units (TEU's), a nominal unit of measure equal to a 20'x8'x8' shipping container.

Credits...

Photographs shown on the cover, viewed clockwise beginning from the top left, are courtesy of Hapag-Lloyd, Maersk (© Maersk Inc.), Yantian International Container Terminals, Port of Felixstowe, Railhead Video Productions (© 2001 Richard W. Clark) and Yantian International Container Terminals.

Respondent Characteristics

Respondents were asked a series of questions that would enable MARAD to categorize their responses. These dealt with where they provided service, the importance of U.S. trade to their operations, and their involvement in vessel sharing and ancillary services.

All of the 21 respondents operate in the U.S. transatlantic trade, and all but one operate in the transpacific trade. All of the carriers offer service transatlantic to U.S. East Coast ports, and 19 of the 21 offer service transpacific to U.S. West Coast ports. There are also 18 carriers that offer all-water service transpacific to or from U.S. Atlantic Coast ports. Figure 1 displays the specific areas served by the respondents' all-water services

Ten of the respondents provide direct service to East Coast Canadian ports and 18 provide direct service to West Coast Canadian ports.

The carriers were asked to indicate the importance of U.S. trade to their total operations. Fourteen indicated that U.S. trade accounted for less than 50 percent of their total volume carried. The other 7 indicated that it was in the 50 to 75 percent range.

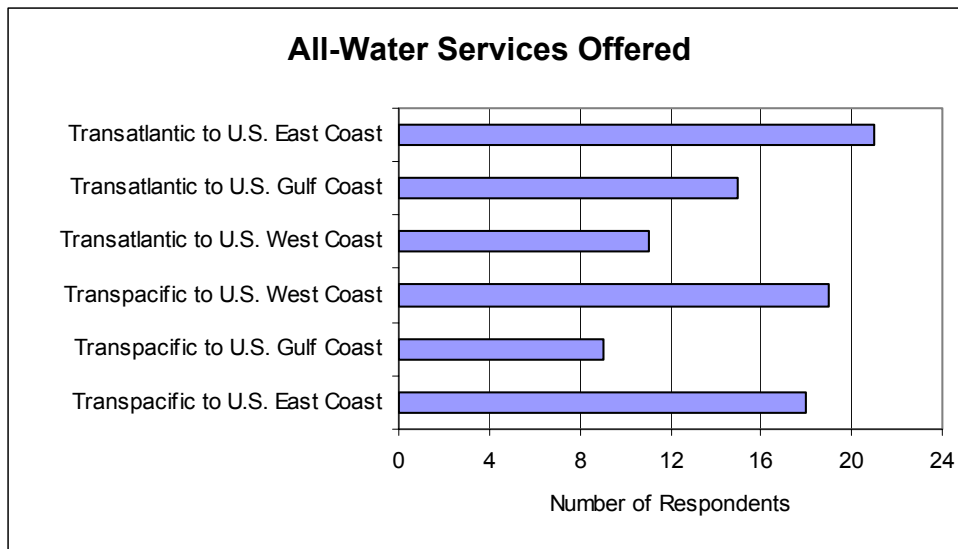
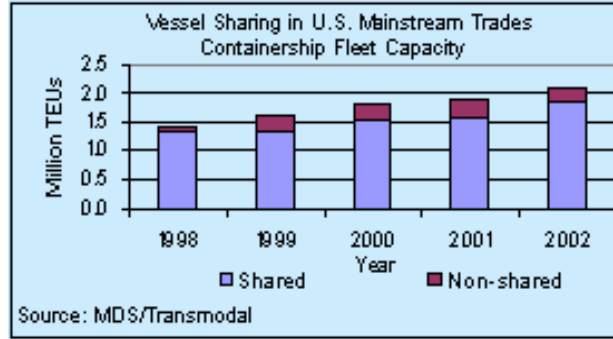


Figure 1

According to data available to the Maritime Administration, the 21 carrier respondents operated 513 vessels with a total capacity of more than 2 million TEU's in U.S. mainstream container trades at the end of 2002. Alliances, joint services and space charters are common in those trades. In fact, 87 percent of the capacity operated in U.S. mainstream trades in 2002 was involved in some type of vessel sharing agreement (Sidebar 2). While that percentage has grown since 1999, it is lower than it was in 1998, reflecting the temporary impact of industry consolidation.



Sidebar 2

The survey confirmed the high level of vessel sharing, with all but one of the respondents stating that they were involved in vessel sharing agreements in U.S. trades. To better understand the nature of carrier participation in these agreements, participants were also asked to indicate whether they provided ships in the agreement or only chartered space. Sixteen of the respondents provided ships in transatlantic agreements, while 18 provided ships in the transpacific trades (Figure 2).

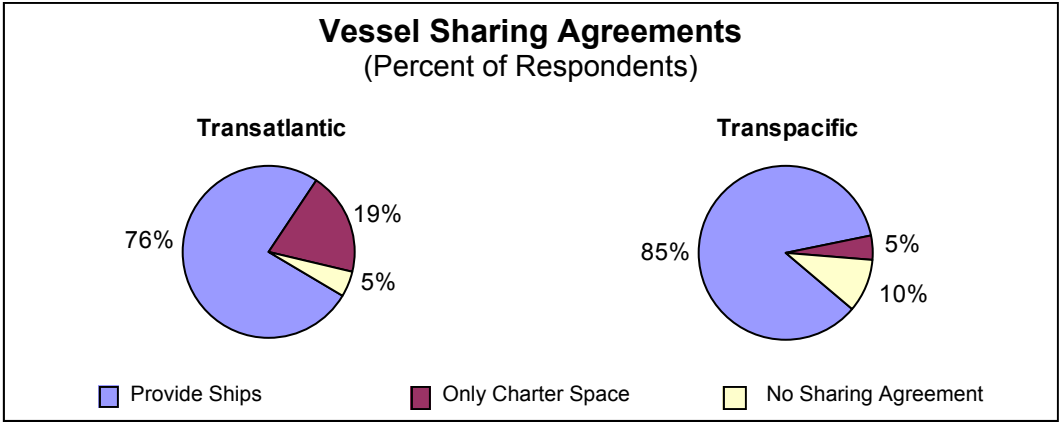


Figure 2

In order to understand the breadth of services offered, the companies were asked to indicate the extent to which they operated certain ancillary services at U.S. ports (Figure 3). Fifteen of the respondents stated that they operate marine terminals and inland truck services at some of their U.S. ports.

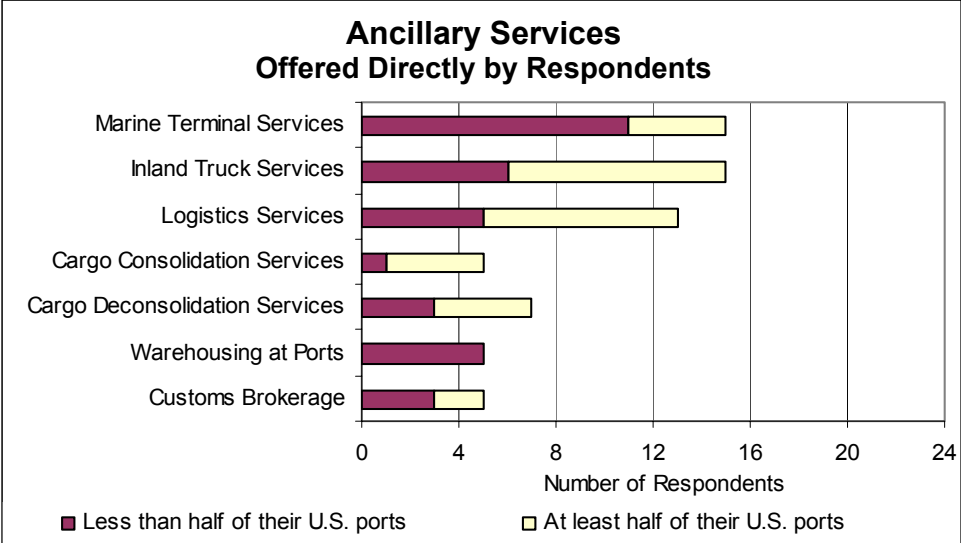


Figure 3

The companies were also asked to indicate the extent to which their customers use these services. Of the 15 companies offering marine terminal services, eleven stated that more than 50 percent of their customers utilize the services. All of the companies' responses are shown below in table 1.

Type of Service	Respondents	Customer Use (Percent)		
		<25	25-50	>50
Marine terminal services	15	0	4	11
Inland truck services	15	4	6	5
Logistics services	13	6	4	3
Cargo consolidation services	5	4	1	0
Cargo deconsolidation services	7	5	2	0
Warehousing at ports	5	3	2	0
Customs brokerage	5	4	0	1

Table 1

The operators were asked to indicate to what extent their firm controlled (through ownership or long-term lease) various kinds of assets. Thirteen respondents indicated some level of control of marine terminals, but only 8 of those described their level of control as significant (Figure 4). For the other types of assets (warehouses, rail rolling stock and trucks), only a few respondents stated that they had some control, and none of those categorized it as significant.

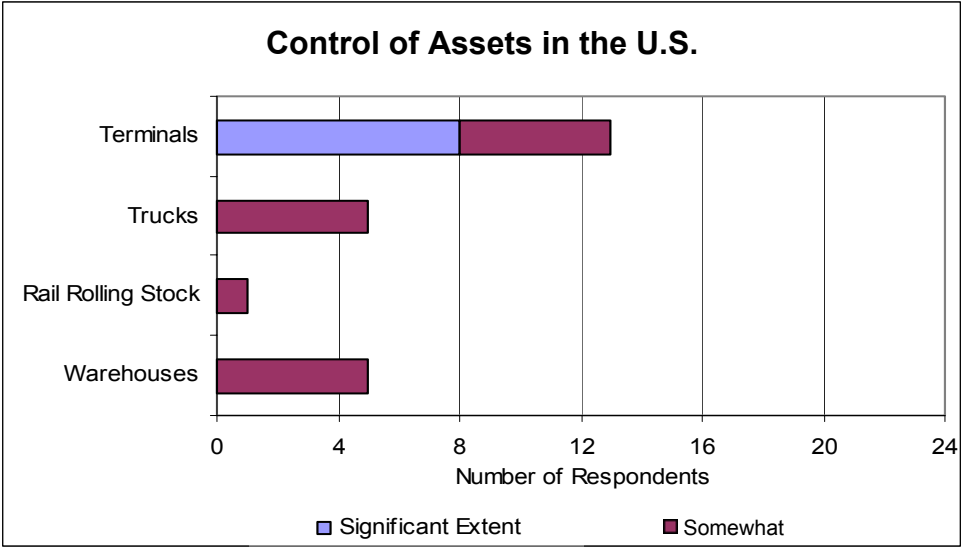


Figure 4

Respondent Attitudes and Perceptions

Survey participants were asked a series of questions that would shed light on industry trends, quality of service, port performance and feeder services.

Following earlier questions regarding their current control of certain kinds of assets, the carriers were asked about their plans to increase control of these types of assets. Fifteen of the 21 respondents indicated plans to increase control of U.S. terminal assets, but only 2 of those described their plans to increase control as significant (Figure 5). There was only modest interest in expanding control of the other kinds of assets.

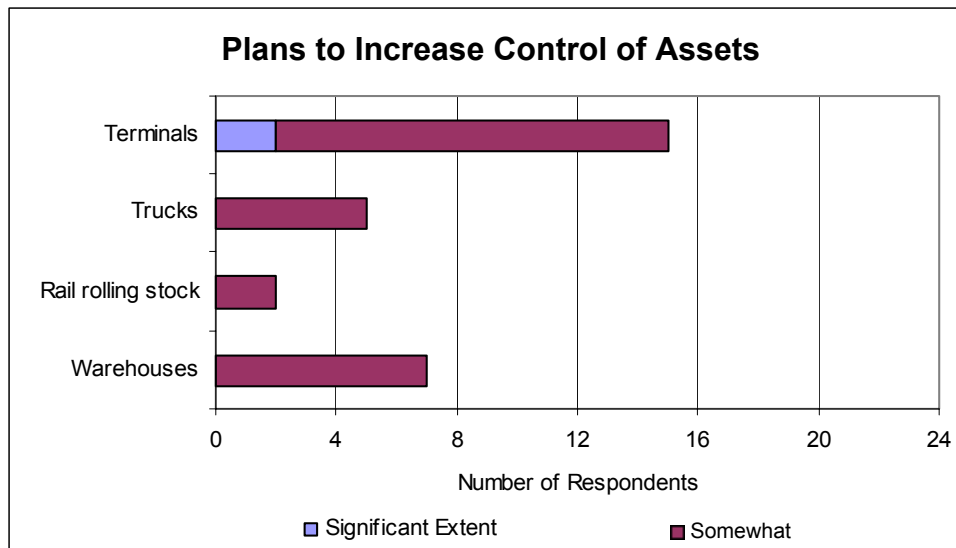


Figure 5

Each carrier was asked to evaluate 14 service characteristics for the liner shipping industry as a whole and to indicate whether the quality for each of the characteristics has gotten better, remained the same, or gotten worse over the last three years. As a group, the respondents assigned positive evaluations to 10 of the 14 characteristics (Figure 6). Cargo tracking, door-to-door transit times and port-to-port transit times received the highest ratings. In contrast, declining revenues per move and increases in truck dwell time at terminals were also clearly reflected in the responses.

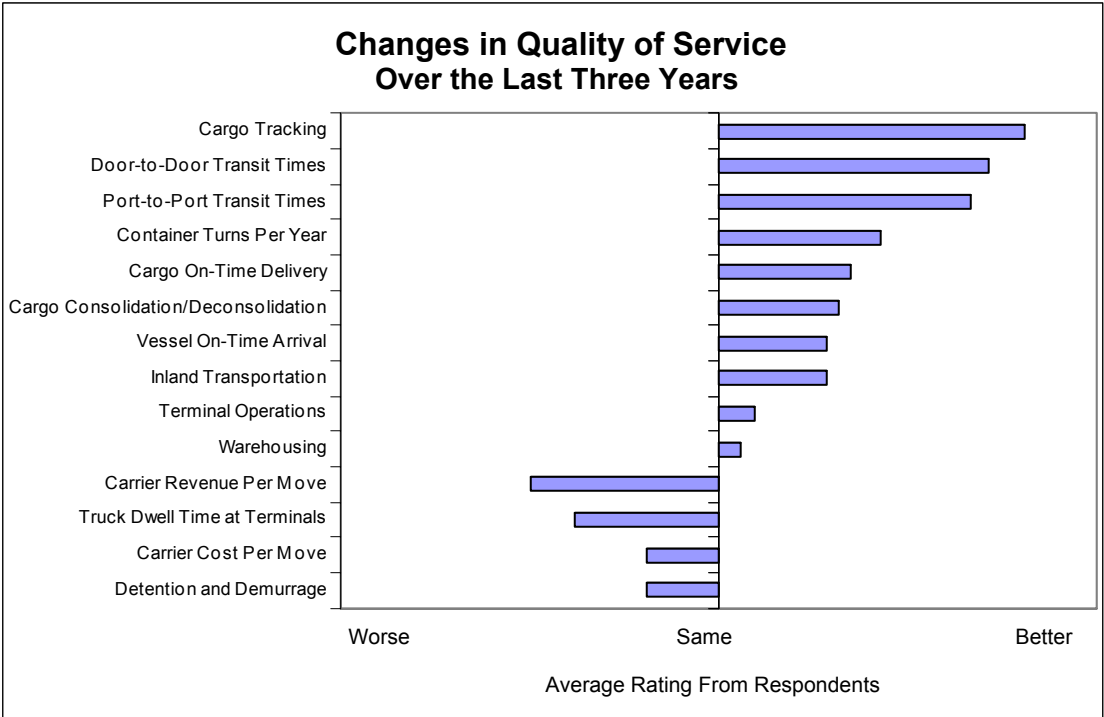


Figure 6

Recognizing that improvements in all of these service characteristics cannot be emphasized at the same time or to the same extent, the carriers were asked to indicate, in terms of their strategic planning, the level of emphasis to be applied to each of the service characteristics in the next year. While virtually all of the service characteristics are expected to receive at least some emphasis in the next year, vessel on-time arrival, cargo on-time delivery and cost reduction are expected to receive the greatest emphasis (Figure 7).

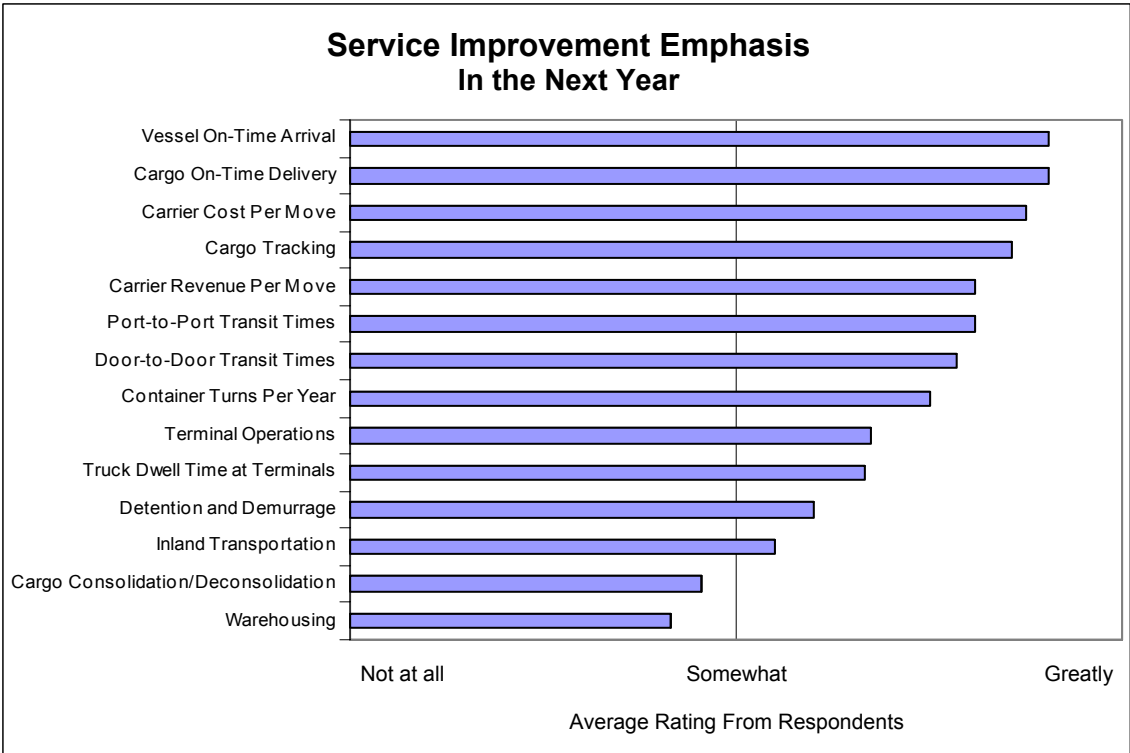


Figure 7

According to data obtained from PIERS, the top ten carriers accounted for 65 percent of the 2002 traffic, the same as 1998 (Sidebar 3). Despite this seemingly consistent level of industry concentration in recent years, more than half of the respondents expect further declines in the number of vessel operators over the next three years (Figure 8). Ten of the respondents expect the number of freight forwarders to also decline.

Industry Concentration, U.S. Mainstream Container Trades (Thousand TEUs)					
Carriers	1998	1999	2000	2001	2002
Top 5	4,869	5,004	6,072	5,998	6,503
Top 10	7,696	8,175	9,199	9,310	10,144
Top 20	10,895	11,705	12,727	12,920	14,352
Total	11,795	12,747	13,966	14,052	15,563

Source: Journal of Commerce, PIERS.

Sidebar 3

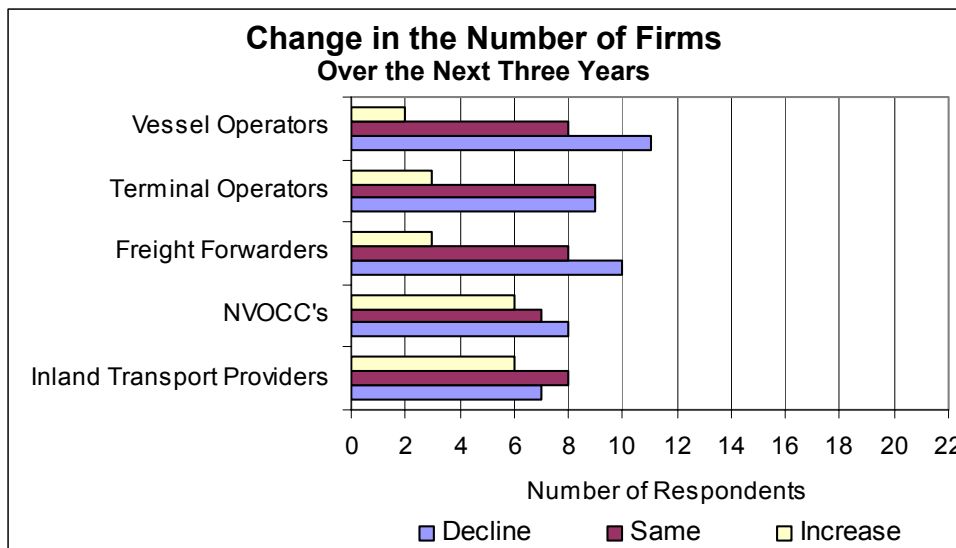


Figure 8

The next group of questions in the survey asked the carriers to compare U.S. and foreign container ports on each of nineteen features common to most container ports. They were asked to separately compare U.S. versus European, Asian and Canadian ports.

Top 5 U.S. Container Ports Transatlantic Trade, 2002 (Thousand TEUs)					
Ports	1998	1999	2000	2001	2002
New York	1,017	1,075	1,135	1,182	1,239
Charleston	559	629	698	676	656
Houston	509	517	489	505	564
Norfolk	420	467	458	466	495
Savannah	165	176	188	193	230
Top 5 Total	2,670	2,864	2,968	3,022	3,184
Total	3,614	3,824	3,988	4,004	4,154
Top 5, % of Total	74	75	74	75	77

Source: Journal of Commerce, PIERS.

According to data available to the Maritime Administration, transatlantic container traffic is heavily concentrated at U.S. ports (Sidebar 4).

In the transatlantic trade, the top 5 container ports accounted for 77 percent of the traffic in 2002, up 3 percent since 1998. There was no shifting in the rankings during the period.

There is somewhat less concentration among the European container ports, with the top 5 European ports accounting for 56 percent of the U.S. transatlantic traffic in 2002 (Sidebar 5). There has also been no shift in the rankings among European ports since 1998.

Top 5 European Ports Transatlantic Trade, 2002 (Thousand TEUs)					
Ports	1998	1999	2000	2001	2002
Rotterdam	695	697	645	627	671
Bremerhaven	521	546	598	555	611
Antwerp	493	545	585	552	585
Le Havre	367	376	316	273	266
Felixstowe	180	201	209	232	211
Top 5 Total	2,257	2,365	2,353	2,239	2,343
Total	3,614	3,824	3,988	4,004	4,154
Top 5, % of Total	62	62	59	56	56

Source: Journal of Commerce, PIERS.

Sidebar 5

The carriers were asked to first compare and rate U.S. and European container ports overall (not just the major ports shown in the sidebars). The respondents rated European ports better than U.S. ports on 13 of the 19 features, with the greatest disparity being in feeder services, cost and overall efficiency. U.S. ports fared best in availability of chassis, rail access and security (Figure 9).

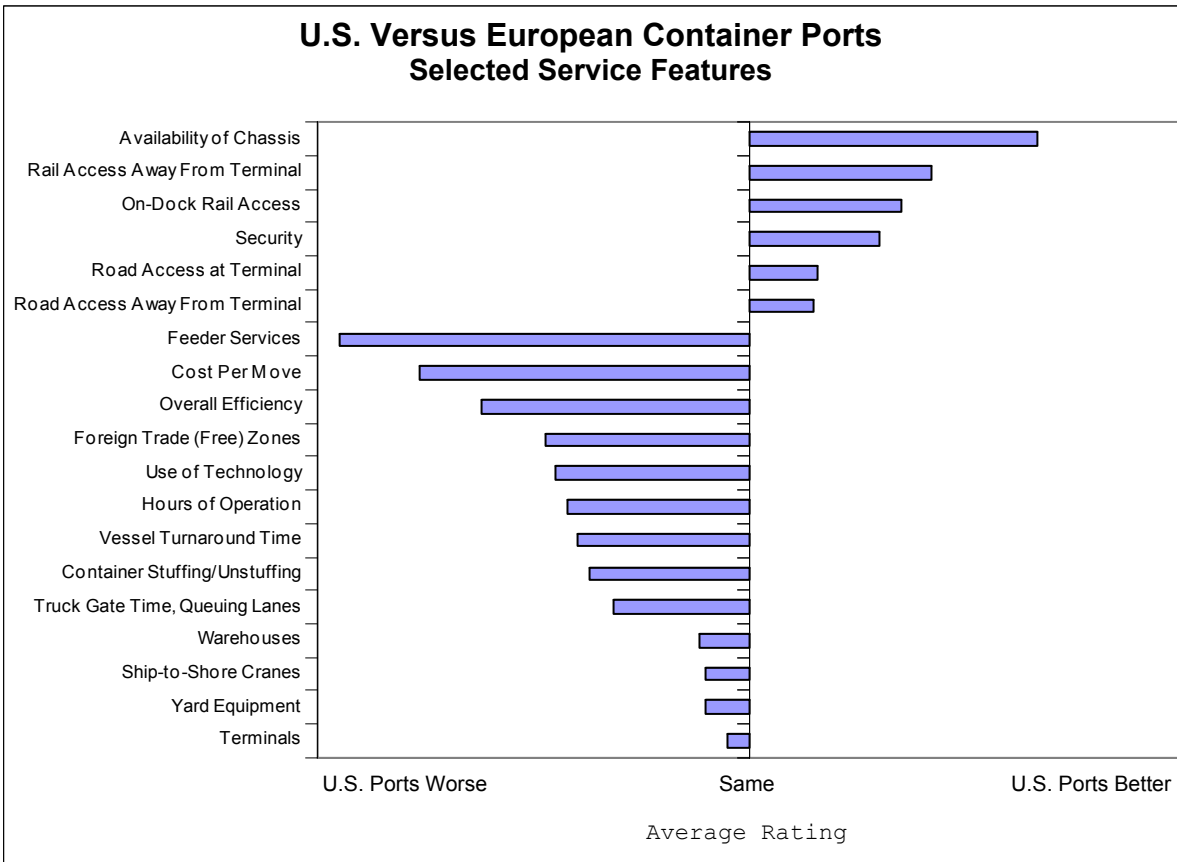


Figure 9

When asked to compare U.S. and Asian ports on the same 19 features, the respondents as a group also rated Asian ports as better than U.S. ports in 13 of the 19 categories (Figure 10). The average ratings favored Asian ports for feeder services, cost, free trade zones, overall efficiency and hours of operation. U.S. ports were rated better for rail access, availability of chassis and road access.

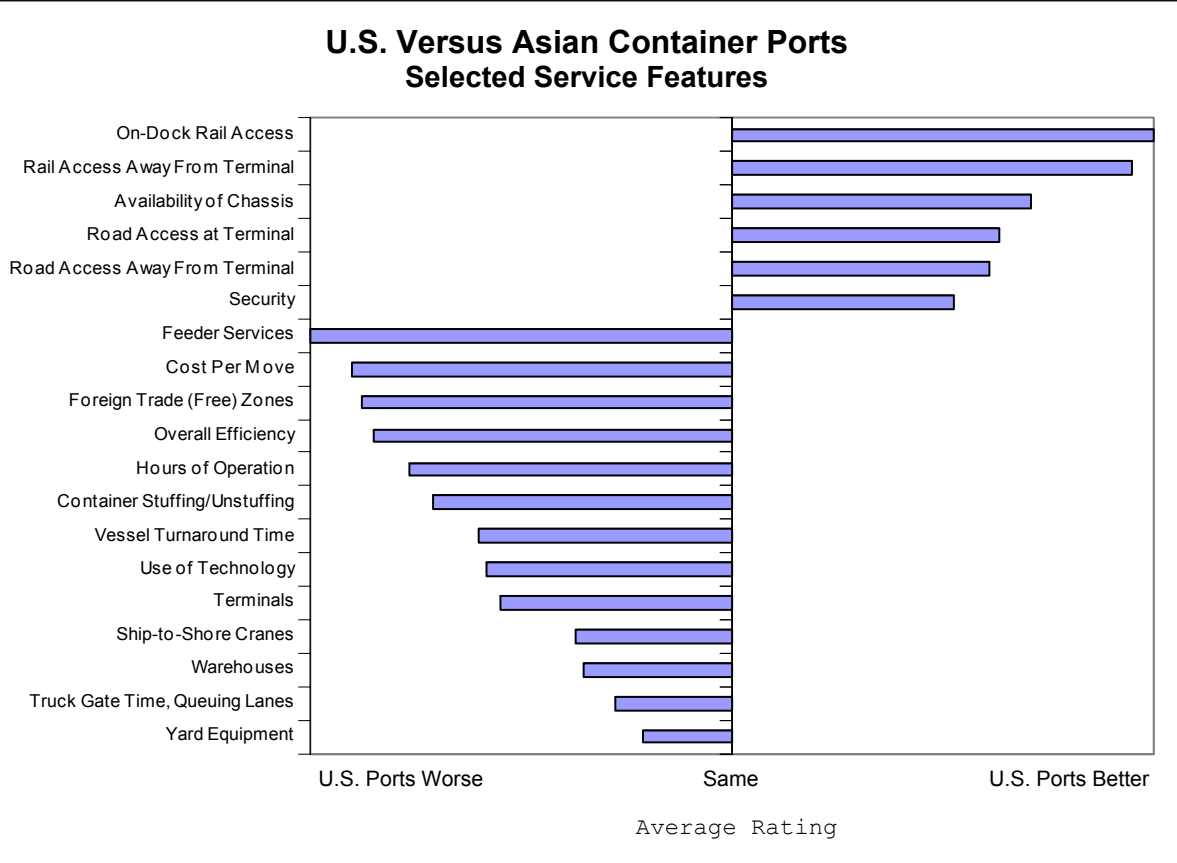


Figure 10

Data drawn separately from PIERS on the principal U.S. and Asian container ports involved in the U.S. transpacific trade and the concentration of traffic in those ports is shown in Sidebars 6 and 7. Los Angeles and Long Beach accounted for 57 percent of the total transpacific traffic in 2002. The position of New York is also noteworthy, reflecting the level of all-water service through the Panama Canal. The top 5 Asian ports for U.S. transpacific trade accounted for 68 percent of the traffic in 2002. There was no shift in the port rankings from 1998 to 2002 for either the U.S. or Asian ports listed in the sidebars.

Top 5 U.S. Container Ports Transpacific Trade, 2002 (Thousand TEUs)					
Ports	1998	1999	2000	2001	2002
Los Angeles	2,499	2,717	2,862	3,084	3,714
Long Beach	1,940	2,198	2,854	2,826	2,831
New York	936	909	905	778	831
Seattle	727	740	788	749	811
Oakland	502	571	635	659	765
Top 5 Total	6,604	7,134	8,044	8,096	8,951
Total	8,181	8,923	9,978	10,048	11,408
Top 5, % of Total	81	80	81	81	78

Source: Journal of Commerce, PIERS.

Sidebar 6

Top 5 Asian Ports Transpacific Trade, 2002 (Thousand TEUs)					
Ports	1998	1999	2000	2001	2002
Hong Kong	2,414	2,632	2,878	2,827	2,868
Kaohsiung	1,361	1,387	1,388	1,344	1,494
Yantian	843	946	1,066	1,062	1,270
Pusan	798	875	877	784	1,263
Shanghai	572	568	712	726	897
Top 5 Total	5,994	6,414	6,926	6,749	7,798
Total	8,181	8,923	9,978	10,048	11,408
Top 5, % of Total	73	72	69	67	68

Source: Journal of Commerce, PIERS.

Sidebar 7

The respondents that call at Canadian ports were also asked to compare U.S. and Canadian container ports on the same features. Eighteen carriers indicated that they provide vessel service to Canada's West Coast, while 10 stated that they provide vessel service to Canada's East Coast. Only one indicated no service to Canadian ports. In the comparisons with European and Asian ports the carriers generally had a very clear preference on most of the features rated. In the comparisons with Canadian ports, the responses were mixed, and the margin of preference was generally low. However, the average ratings for the group as a whole favored U.S. over Canadian ports in 17 of the 19 features surveyed (Figure 11). U.S. ports fared best in the security, availability of chassis, and terminals categories. The two categories in which Canadian ports were preferred were cost per move and truck gate time.

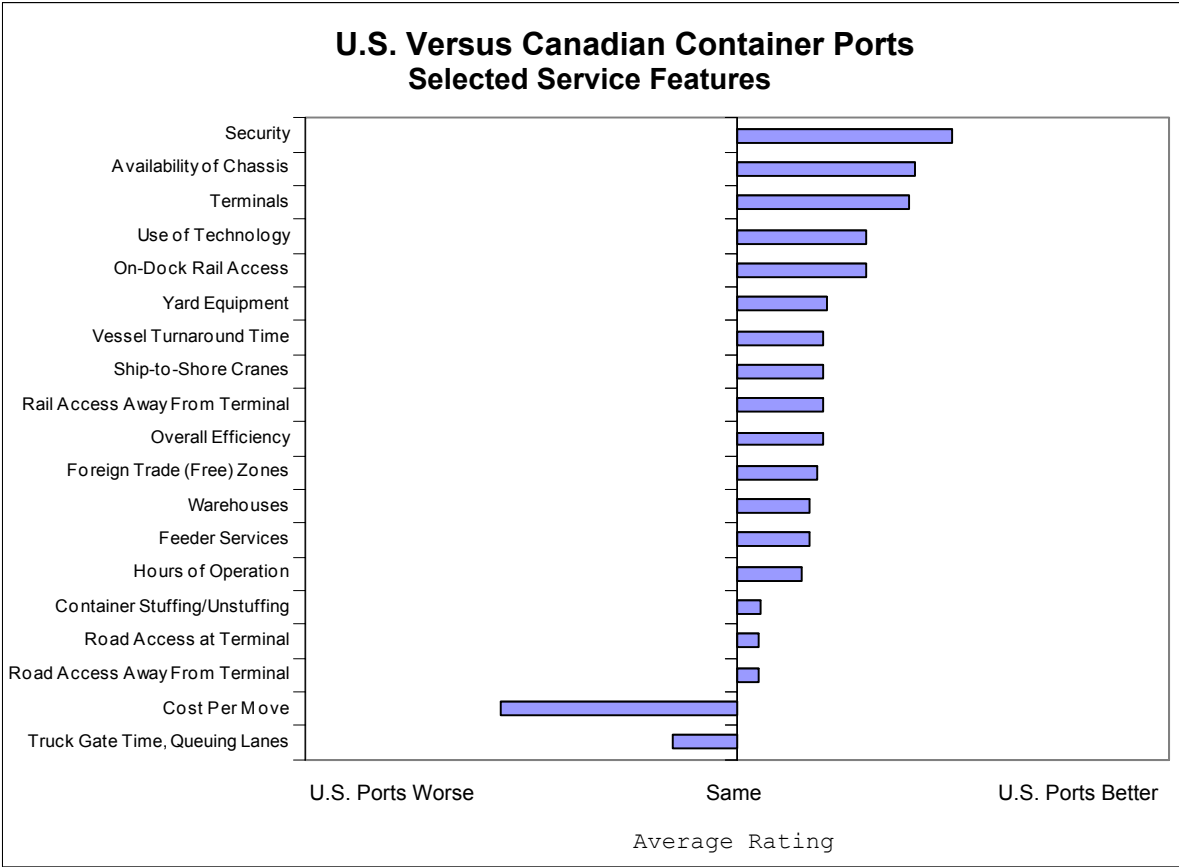


Figure 11

When asked to indicate the extent to which certain factors contributed to their decision to use Canadian ports in U.S. container trades, inland connections and transit time were the features most often cited as contributing significantly to the decision. Thirteen of the respondents indicated that the U.S. Harbor Maintenance Fee contributed at least somewhat to the decision. Congestion and cost at U.S. ports were cited among the specific added comments received for this question.

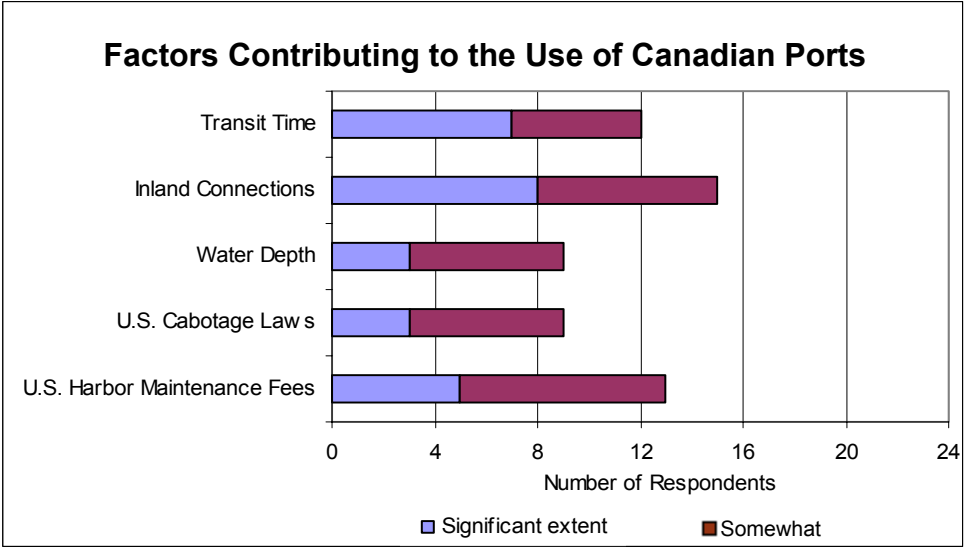


Figure 12

In light of the growing interest in the development of short sea shipping services in the U.S., the carriers were asked whether they expected growth, in the next five years, in domestic U.S. coastal feeder services and U.S. feeder services to or from nearby foreign ports.

Only 2 of the 21 respondents indicated that they expect growth in domestic U.S. coastal feeder services in the next five years, while 11 indicated they expect growth in services to or from nearby foreign ports.

Finally, to ensure that MARAD's market research efforts are consistent with industry practices the survey participants were asked a series of questions on the subject. All but one of the respondents indicated that they conduct market research.

Every one of the respondents that conduct market research use it to determine customer satisfaction, the potential for new services, and to forecast future business. All but one use it for critical feedback and competitive analysis.

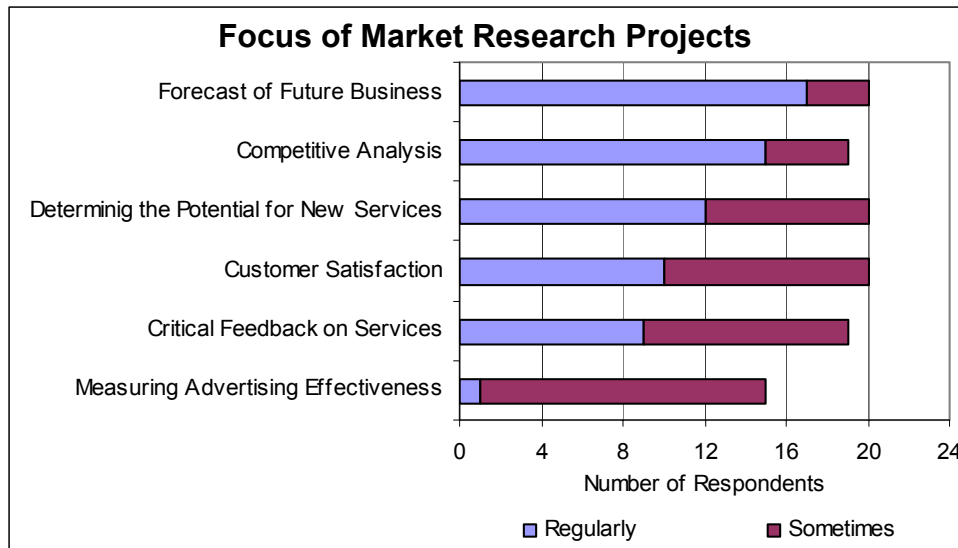


Figure 13

The respondents were also asked whether information developed during negotiation of confidential service contracts provides an alternative to customer satisfaction and critical feedback surveys. Twelve of respondents indicated that it does and seven answered that it does not.

Concluding Observations

Carrier response to this survey were overwhelming. The 21 of 22 responses represent a 95 percent response rate. No attempt was made to interpret the survey responses. In a dynamic industry, all information provided by the carriers is useful and important. As this was the first survey of its kind, it provides a baseline for future dialog with this segment of the maritime industry on the critical issues that it faces.

Again, MARAD is extremely grateful to the respondents for their assistance.

Appendix A

Marad Carrier Questionnaire

1. What percent of your total volume carried is in U.S. trade?
- Less than 50%
- 50% to 75%
- More than 75%
2. To which of these trade areas do you offer all-water service?
- Transatlantic to U.S. East Coast ports
- Transatlantic to U.S. Gulf Coast Ports
- Transatlantic to U.S. West Coast Ports
- Transpacific to U.S. West Coast ports
- Transpacific to U.S. Gulf Coast Ports
- Transpacific to U.S. East Coast Ports
3. At which of the following Canadian port ranges do you provide vessel service?
- East Coast ports
- West Coast ports
- Neither
4. Do you participate in vessel sharing agreements such as alliances, joint services, space charters and the like in U.S. trades?
- Yes **(please continue)**
- No **(please go to question 7)**
5. Regarding your **transatlantic** vessel sharing agreements, do you provide ships in the trade or do you *only* charter space?
- Provide ships in the trade
- Only charter space
6. Regarding your **transpacific** vessel sharing agreements, do you provide ships in the trade or do you *only* charter space?
- Provide ships in the trade
- Only charter space
7. In order to understand the breadth of services offered by your firm, we would like to know the extent to which your company operates the following:
- | | None of the
U.S. ports
served | Some of the U.S.
ports served,
but less than half | Half or more than
half of the U.S.
ports served |
|-------------------------------|--|--|--|
| Marine terminal services | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Inland truck services | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Logistics services | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Cargo consolidation services | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Cargo deconsolidation service | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Warehousing at ports | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Customs brokerage | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

8. For those services that you do operate, approximately what percent of your customers use the services?

	Less than 25%	25% to 50%	More than 50%
Marine terminal services	[]	[]	[]
Inland truck services	[]	[]	[]
Logistics services	[]	[]	[]
Cargo consolidation services	[]	[]	[]
Cargo deconsolidation service	[]	[]	[]
Warehousing at ports	[]	[]	[]
Customs brokerage	[]	[]	[]

9. Defining control as either ownership or long-term lease, to what extent does your firm control the following assets in the U.S.?

	Significant Extent	Somewhat	Not At All
Terminals (including cranes)	[]	[]	[]
Trucks	[]	[]	[]
Rail rolling stock	[]	[]	[]
Warehouses	[]	[]	[]

10. To what extent does your firm plan to increase its control of the following assets in the U.S.?

	Significant Extent	Somewhat	Not At All
Terminals (including cranes)	[]	[]	[]
Trucks	[]	[]	[]
Rail rolling stock	[]	[]	[]
Warehouses	[]	[]	[]

11. In general, looking at the following service characteristics for the liner shipping industry as a whole, has the quality gotten better, remained the same or gotten worse over the last three years.

	Better	Same	Worse
Door-to-door transit times	[]	[]	[]
Port-to-port transit times	[]	[]	[]
Vessel on-time arrival	[]	[]	[]
Container turns per year	[]	[]	[]
Truck dwell time at terminals	[]	[]	[]
Cargo Tracking	[]	[]	[]
Cargo on-time delivery	[]	[]	[]
Terminal operations	[]	[]	[]
Cargo consolidation/deconsolidation	[]	[]	[]
Detention and demurrage	[]	[]	[]
Warehousing	[]	[]	[]
Inland transportation	[]	[]	[]
Carrier cost per move	[]	[]	[]
Carrier revenue per move	[]	[]	[]

12. All companies try to emphasize what they think is most important to their customers. But everything can not be emphasized at the same time or to the same extent. In terms of your strategic planning please indicate those areas that you expect to emphasize greatly, emphasize somewhat or not emphasize at all in the next year. (If you believe a specific area does not apply to your operation, check "Does not apply".)

	Will Greatly Emphasize	Will Emphasize somewhat	Will Not emphasize at all	Does not apply
Door-to-door transit times	[]	[]	[]	[]
Port-to-port transit times	[]	[]	[]	[]
Vessel on-time arrival	[]	[]	[]	[]
Container turns per year	[]	[]	[]	[]
Truck dwell time at terminals	[]	[]	[]	[]
Cargo tracking	[]	[]	[]	[]
Cargo on-time delivery	[]	[]	[]	[]
Terminal operations	[]	[]	[]	[]
Cargo consolidation/deconsolidation	[]	[]	[]	[]
Detention and demurrage	[]	[]	[]	[]
Warehousing	[]	[]	[]	[]
Inland transportation	[]	[]	[]	[]
Carrier cost per move	[]	[]	[]	[]
Carrier revenue per move	[]	[]	[]	[]

Is there any comment you would like to make about this question?

13. In order to understand overall industry consolidation trends, do you expect over the next three years that the number of firms (including affiliates and divisions) in each of the following areas will decline, stay the same or increase.

	Decline	Stay the same	Increase
Vessel operators	[]	[]	[]
Terminal operators	[]	[]	[]
Freight forwarders	[]	[]	[]
NVOCC's	[]	[]	[]
Inland transport providers	[]	[]	[]

Is there any comment you would like to make about this question?

14. Following is a list of features common to most container ports. Comparing **U.S. and European container ports**, please indicate if, in your opinion, U.S. ports are better, the same as, or not as good as **European ports**.

	U.S. Ports Better	U.S. Ports the Same	U.S. Ports Not as Good
Vessel turnaround time	[]	[]	[]
Terminals	[]	[]	[]
Ship-to-shore cranes	[]	[]	[]
Availability of chassis	[]	[]	[]
Yard equipment	[]	[]	[]
Truck gate time, queuing lanes	[]	[]	[]
Road access at terminal	[]	[]	[]
Road access away from terminal	[]	[]	[]
On-dock rail access	[]	[]	[]
Rail access away from terminal	[]	[]	[]
Hours of operation	[]	[]	[]
Warehouses	[]	[]	[]
Container stuffing/unstuffing	[]	[]	[]
Foreign trade (free) zones	[]	[]	[]
Feeder services	[]	[]	[]
Cost per move	[]	[]	[]
Use of Technology	[]	[]	[]
Overall Efficiency	[]	[]	[]
Security	[]	[]	[]

Is there any comment you would like to make about this question?

15. Following is the same list of features just covered. Comparing **U.S. and Asian container ports**, please indicate if, in your opinion, U.S. ports are better, the same as, or not as good as **Asian ports**.

	U.S. Ports Better	U.S. Ports the Same	U.S. Ports Not as Good
Vessel turnaround time	[]	[]	[]
Terminals	[]	[]	[]
Ship-to-shore cranes	[]	[]	[]
Availability of chassis	[]	[]	[]
Yard equipment	[]	[]	[]
Truck gate time, queuing lanes	[]	[]	[]
Road access at terminal	[]	[]	[]
Road access away from terminal	[]	[]	[]
On-dock rail access	[]	[]	[]
Rail access away from terminal	[]	[]	[]
Hours of operation	[]	[]	[]
Warehouses	[]	[]	[]
Container stuffing/unstuffing	[]	[]	[]
Foreign trade (free) zones	[]	[]	[]
Feeder services	[]	[]	[]
Cost per move	[]	[]	[]
Use of Technology	[]	[]	[]
Overall Efficiency	[]	[]	[]
Security	[]	[]	[]

Is there any comment you would like to make about this question?

16. For the same list of features we just covered, now please indicate if, in your opinion, the U.S. ports are better, the same as, or not as good as the Canadian ports served. **(Answer only if you serve Canadian Ports)**

	U.S. Ports Better	U.S. Ports the the Same	U.S. Ports Not as Good
Vessel turnaround time	[]	[]	[]
Terminals	[]	[]	[]
Ship-to-shore cranes	[]	[]	[]
Availability of chassis	[]	[]	[]
Yard equipment	[]	[]	[]
Truck gate time, queuing lanes	[]	[]	[]
Road access at terminal	[]	[]	[]
Road access away from terminal	[]	[]	[]
On-dock rail access	[]	[]	[]
Rail access away from terminal	[]	[]	[]
Hours of operation	[]	[]	[]
Warehouses	[]	[]	[]
Container stuffing/unstuffing	[]	[]	[]
Foreign trade (free) zones	[]	[]	[]
Feeder services	[]	[]	[]
Cost per move	[]	[]	[]
Use of Technology	[]	[]	[]
Overall Efficiency	[]	[]	[]
Security	[]	[]	[]

Is there any comment you would like to make about this question?

17. To what extent have the following factors contributed to your decision to use Canadian ports in U.S. container trades:

	Significant extent	Somewhat	Not at all
Transit time	[]	[]	[]
Inland connections	[]	[]	[]
Water depth	[]	[]	[]
U.S. cabotage laws (feeder options)	[]	[]	[]
U.S. Harbor Maintenance Fees	[]	[]	[]

Is there any comment you would like to make about this question, or other contributing factors you would like to mention?

18. Do you expect growth in domestic U.S. coastal feeder services in the next five years?

Yes []
No []

Please explain

19. Do you expect growth in U.S. feeder services to or from nearby foreign ports in the next five years?

Yes []
No []

Please explain

20. Does your firm conduct market research either on an "as necessary" or on a regular basis -- monthly or yearly?

Yes (please go to question 21) []
No (please go to question 22) []

21. Following is a list of market research projects common to your industry. Please indicate the frequency with which you conduct such activities.

	Regularly	Sometimes	Not at all
Forecast of future business	[]	[]	[]
Competitive analysis	[]	[]	[]
Determining the potential for new services	[]	[]	[]
Customer satisfaction	[]	[]	[]
Critical feedback on service	[]	[]	[]
Measuring advertising effectiveness	[]	[]	[]

Is there any comment you would like to make about this question?

22. In your view does information developed from your confidential service contract negotiating process provide an alternative to customer satisfaction and critical feedback surveys?

Yes []
No []

Is there any comment you would like to make about this question?

Thank you for your time and cooperation.