

Port Performance Research Network

December 2012

The AAPA Customer Service Initiative Report

Key Overall Findings

Over 200 respondents took valuable time to provide us with their insights based on their experience with port service. The largest group was Cargo Interests at 119, but we also heard from 39 Shipping Companies and 48 Supply Chain Partners. This input was valuable to ports, and much appreciated.

This research examined service delivery effectiveness in seven North American container ports, with more than 250,000 TEUs in volume, and was conducted by the Dalhousie University-based team of Dr. Mary R. Brooks and Dr. Tony Schellinck. The objective of this research was to provide the management of each port with useful data on their performance as seen by three user groups and to interpret the data for management. It is up to management to assess these findings and to decide how to use the information provided. It was also to provide the AAPA with the top line results of the survey.

Port user groups rate a port's effectiveness in service delivery differently, i.e., a port that is rated highly by the shipping lines may score poorly when rated by cargo owners or its own supply chain partners, or vice versa.

The pattern of performance gaps were different on the various criteria for each port. In all cases, the initiative identified criteria for targeted improvement for each user group—Cargo Interests, Shipping Lines, and Supply Chain Partners. Each port had a unique portfolio of factors to invest for improvement, and many ports found a usable “market for awareness” opportunity. East and West Coast patterns were also noted.

Participating ports all reported that the Determinance/Importance Performance Gap Space provided a framework, which could be readily understood by their partners and staff, and on which they could hang improvement initiatives. Ports agree that it would be best to repeat this survey in about two years to identify the impact of their investments on their performance ratings.

What Participating Ports Thought About the Research

From one: *Overall, we find this approach to measuring customer satisfaction useful to help us understand and improve customer perception of and experience with our port. The findings provide an insight into what is most important to our customers and also provide a framework for us to use in setting priorities as we look to improve their experience with our port. The report has practical application and would allow us to easily identify next steps to improve customer satisfaction by pointing out areas needing most attention and areas where we could market for awareness.*

From another: *The opportunity to gain feedback from key port stakeholders on our port's performance will be valuable information to help us and our partners identify and improve key port performance metrics. Despite the 2012 survey being the first year of the study, we found the findings to be in-depth and relevant to our cargo business. The questions are detailed and provide specific feedback in a wide range of operational areas of the cargo business. We were pleased with the approach taken by the Dalhousie University research team in identifying important measures of performance and relating those to the value of each measure from the port user's point of view. The team at Dalhousie is a highly professional, competent group that can provide solid data and quality reporting on findings. We encourage other ports to participate in this worthy AAPA initiative as a greater level of port participation will improve the overall study. We intend to continue participating in this study and we hope to see the study expand over time to a larger group of ports.*

The AAPA Customer Service Initiative

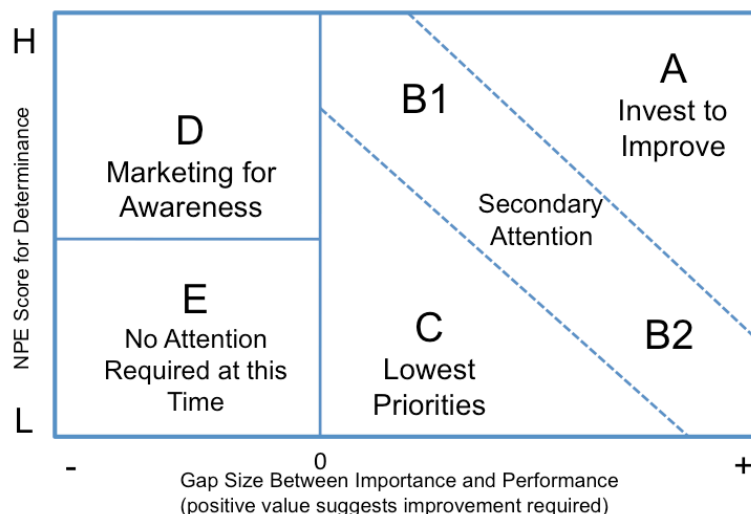
What We Did...

Each port participating in the study received from the research team a report with the results for each user group. Their individual results were framed in a Determinance/Importance-Performance Gap Space created by Drs. Schellinck and Brooks to explain to ports (and in particular the management team) the meaning of what respondents said in a way that is easily understood. This analytical framework has been published in peer-reviewed journals (see page 10 for the readings) and presented at practitioner conferences, and has withstood the scrutiny of experts in port performance assessment. Each participating port received a determinance/IP gap space analysis of their own findings for each user group. How they choose to use the best practice benchmarks and their own results will depend on the port's service goals. Based on the feedback from participating ports, non-participating ports would benefit from an opportunity to participate in a follow-up survey.

There is a set of criteria for each of the three user groups. Each user group places the criteria in a different location for each port. The location of each criterion identifies for management a particular suitable action, e.g., investment for improvement or marketing for awareness. The sidebar at the right explains how the space should be read when particular criteria fall into the five locations mapped in the space below. The instrument's value to the ports will increase as user participation rates increase and as more ports participate.

Rather than present individual charts for each port, we present overall results in the tables and summaries on the following pages, which we think will have considerable interest to the general reader.

Determinance/Importance Performance Gap Space



Reading the Space

A. Improve to Invest: Criteria that have both a high NPE score on determinance for effectiveness in service delivery and a high gap with poorer performance on highly important (relevant) criteria will be identified by their position in triangle A, the upper right-hand corner of the space, and are worthy of immediate attention.

B. Secondary Attention: Criteria located at B1 have a strong influence on perceived service quality, but there is not a large performance gap, while for B2 there is a larger performance gap on criteria that **at this time** have relatively little influence on perceived service quality. Criteria in these spaces are lower priorities than those in triangle A.

C. Low Priorities: Criteria located in Triangle C have low determinance scores and low gap sizes meaning they are even lower priority criteria and not candidates for urgent investment.

D. Marketing for Awareness: For these criteria, the port's performance is scored higher than the criterion's importance and the criterion normally gets no attention for resource allocation.

However, the NPE score indicates that these criteria have a strong influence on perceived service effectiveness, and so some of these may be candidates for promotion in a marketing campaign aimed at increasing user awareness of this strength. We recommend that the port only promote these if the port's relative score is greater than 70% on the criteria.

E. No Attention Required at this Time: These criteria are neither influential in performance scores nor have a gap to be repaired. If they become more relevant over time, they could be marketed as strengths in future.

The NPE (Normalized Pairwise Estimation) score for determinance measures the degree performance ratings are predictive of perceived service effectiveness. Changes to ratings on high scoring criteria should lead to changes in perceived service effectiveness.

Gap Size is the difference between rated performance and importance (relevance). A high positive value here indicates that improved performance on this criterion should lead to improved service effectiveness ratings.

What Cargo Interests* Told Us

* Cargo Interests are cargo owners or their agents (exporters, importers, retailers, and freight forwarders, but not customs agents and brokers in this survey).

Performance Evaluation by Cargo Interests

Evaluative Criteria	Influence East Coast	Influence West Coast	Performance Scores (7 ports)		Ports Needing to Invest	Ports Able to Market
			Lowest	Highest		
Ability to deliver/offer services tailored to different Cargo Interests	Medium	Medium	4.21	6.09	0	2
Choice of rail/truck/warehousing companies	Medium	Weak	5.25	6.12	0	2
Capability of employees (can they accommodate our needs?)	Medium	Strong	4.50	5.89	4	0
Connectivity/operability to rail/truck/warehousing	Medium	Weak	5.19	6.11	0	1
Port authority responsiveness to special requests	Strong	Medium	4.55	6.19	1	1
Availability of direct service to cargo's destination	Medium	Weak	5.38	6.33	0	0
Incidence of cargo damage	Medium	Medium	5.29	6.43	0	0
Port security	Weak	Medium	5.50	6.61	0	0
Provision of adequate, on-time information	Medium	Strong	5.00	6.08	3	0
Terminal operator responsiveness to special requests	Strong	Strong	4.44	5.96	3	1

How to interpret these data for all tables

Influence on Rating of Effectiveness of Service Delivery – A higher NPE score indicates a greater influence on perceived service delivery. Influence is presented as a categorization of NPE scores: 0 – 0.19 is Weak, 0.20 – 0.29 is Medium, and 0.30 or more is a Strong influence on the effectiveness rating received.

Performance Scores – The highest and lowest performance scores in the seven ports. Performance is rated on a 7-point scale where 1 = very poor.

Ports Needing to Invest – The number of ports where this criterion fell into the Invest to Improve Space (A).

Ports Able to Market – The number of ports where this criterion fell into the Marketing for Awareness space (D) and their performance on that criterion had a relative Score of greater than 70% (e.g. they scored better than 70% of the gap between the worst performer and the best performer). The relative score provides a quick assessment of the relative performance (compared to all ports evaluated) on a particular dimension as rated by a particular user group. If the lowest mean rating on a criterion is 4.00, and the highest 6.00, and the port received a mean rating of 5.00 then the range is 2.00 (from 4.00 to 6.00) and the port's relative score is 50% since it is half the distance from the lowest mean rating to the highest.

Key Findings for Cargo Interests*

* Cargo Interests are cargo owners or their agents (exporters, importers, retailers, and freight forwarders, but not customs agents and brokers in this survey).

The criteria with the strongest influences on both coasts tended to be those that had to do with customer relationships, responding to and accommodating specific needs, and providing useful information. These criteria had either a strong or medium influence on overall performance assessments on both coasts.

Cargo Interests rated some ports particularly low in terms of ability to offer tailored services, ability of employees to accommodate their needs, and both the terminal operator and port authority responsiveness to special requests; with ratings ranging from 4.21 to 4.55 on these four criteria having the largest range between the poorest and the best performers.

These same four criteria were most often areas identified for needed improvement in ports; with four ports needing to improve capability of employees to accommodate cargo interest needs, three each needing to improve terminal operator responsiveness and the provision of adequate on-time information. One port needed to improve port authority responsiveness to special requests.

Five criteria were identified in ports as marketable as they had negative gaps, had influence scores above the mean and received relative performance scores above 70%. These were: a port's ability to deliver/off services tailored to different Cargo Interests, choice of rail/truck/warehousing companies, connectivity/operability to rail/truck/warehousing, port authority responsiveness to special requests, and terminal operator responsiveness to special requests. Several of these criteria were identified as critical to achieving high performance scores and, as some ports were particularly weak on these criteria, they offer real opportunities for those ports where these marketable criteria were identified.

Five new criteria were suggested by this user group as worthy of consideration for future surveys. Given the importance of inventory carrying cost to many cargo owners, we believe that criteria directly related to speed of service for cargo interests could be included. Participating ports have also questioned whether ability of employees to accommodate their needs applies to terminal operators or port authorities. Perhaps this is two criteria.

Comments from Cargo Interests

Of responses from 119 Cargo Interests, these two comments illustrate the importance that ports place on feedback on service delivery and company competitiveness for this user group:

Not bad at this port but again much higher freight costs and trucking that make it hard to work with customers and still feel a good deal has been given.

I also am very disappointed in the information their website provides when compared to other ports I use.

What Shipping Lines* Told Us

* Shipping Lines are container shipping lines (but not bulk shipping lines in this survey; also not included are companies that provide towage, pilotage or refueling services via a vessel operation).

Evaluation by Container Shipping Lines

Evaluative Criteria	Influence East Coast	Influence West Coast	Performance Scores (7 ports)		Ports Needing to Invest	Ports Able to Market
			Lowest	Highest		
Availability of storage capacity	Medium	Weak	4.92	5.91	0	1
Availability and capability of dockworkers	Medium	Medium	4.29	6.08	3	0
Choice of logistics providers serving the port	Medium	Weak	4.92	5.67	0	2
Connectivity/operability to rail/truck/warehousing	Medium	Weak	4.29	6.22	2	0
Port authority responsiveness to special requests	Medium	Weak	3.00	6.18	3	0
Incidence of cargo damage	Weak	Weak	5.22	5.80	0	0
Incidence of delays	Medium	Strong	4.29	5.80	5	0
Invoice accuracy	Weak	Medium	5.36	6.00	0	0
Provision of adequate, on-time information	Medium	Medium	5.14	5.89	1	0
Quality of maritime services (pilotage, mooring etc.)	Medium	Weak	5.36	6.57	0	0
Quality of rail/truck/warehousing companies	Strong	Weak	5.14	5.90	0	2
Reasonableness of port charges	Weak	Weak	3.43	5.78	3	0
Speed of stevedore's cargo loading/unloading	Medium	Strong	4.64	5.92	5	0
Sufficiency of size of hinterland	Weak	Weak	4.73	6.30	0	0
Timeliness of maritime services (pilotage, mooring etc.)	Weak	Weak	4.91	6.33	0	0
Timely vessel turnaround	Medium	Medium	4.64	6.11	5	0
Port security	Weak	Medium	5.50	6.50	1	0
Terminal operator responsiveness to special requests	Medium	Weak	4.83	6.08	3	0

Key Findings for Shipping Lines*

* Shipping Lines are container shipping lines (but not bulk shipping lines in this survey; also not included are companies that provide towage, pilotage or refueling services via a vessel operation).

Those shipping lines assessing the East Coast ports are influenced by a wider range of criteria than those assessing the West Coast ports; the most influential criterion for East Coast ports, the quality of rail/truck/warehousing companies, only has a weak association with overall performance when shipping lines assess West Coast ports. Those assessing the West Coast ports are most influenced by factors related to time—the incidence of delays and the speed of stevedore's cargo loading and unloading, as well as vessel turnaround (which is of medium influence).

There were four criteria that had relatively weak influence on overall service performance on both coasts. These were the incidence of cargo damage, the reasonableness of port charges, the sufficiency of size of hinterland and the timeliness of maritime services, such as pilotage and mooring.

There are five criteria that receive very low ratings in some ports, and where there were large ranges in the ratings among the ports, meaning that these criteria offer significant opportunity for change in the low-rated port's overall performance rating by shipping lines. These are availability and capability of dockworkers, connectivity/operability to rail/truck/warehousing, port authority responsiveness to special requests, incidence of delays, and the reasonableness of port charges.

There are three criteria in which five ports need to invest: the incidence of delays, the speed of stevedore's cargo loading/unloading and timely vessel turnaround, all related to speed of service received by the shipping lines. As many container lines have experience elsewhere, this is a telling gap in performance. Three ports need to invest in the terminal operator and port authority responsiveness to special requests, and three need to deal with the availability and capability of dockworkers and the reasonableness of port charges. There are some other criteria requiring investment at at least one port.

Some ports are able to market the quality of rail/truck/warehousing companies, a criterion of strong influence on the East Coast.

One additional criterion was suggested as being possible to add to future surveys.

Comments from Shipping Lines

Of responses by 39 Shipping Lines, these two comments illustrate the feedback on service delivery and company competitiveness for this user group:

Congestion for vessels is taking at times some toll on [our] vessel calls. [We] require further infrastructure development and improved pilotage/tug facilities. [A] little more flexibility on start time for ILA will improve port's handling of bigger ships.

Challenges with labor regulations mean that [Port name] suffers from a higher cost, however it benefits from economies of scale.

What Supply Chain Partners* Told Us

* Supply Chain Partners are trucking companies, warehouse operators, and rail lines (but not those who provide other services to the port or terminal operators in this survey).

Evaluation by Supply Chain Partners

Evaluative Criteria	Influence East Coast	Influence West Coast	Performance Scores (5 ports**)		Ports Needing to Invest	Ports Able to Market
			Lowest	Highest		
Accessibility to port premises for pick-up and delivery (gate congestion)	Medium	Strong	4.80	6.13	5	0
Availability of capacity	Strong	Weak	4.63	5.88	0	2
Availability of labor (do we have to wait to find someone?)	Medium	Strong	4.40	6.20	2	0
Efficiency of documentary processes	Strong	Medium	5.00	6.14	1	1
Incidence of delays	Medium	Strong	3.50	5.88	3	0
Invoice accuracy	Weak	Weak	5.00	6.43	0	0
Ocean carrier schedule reliability/integrity	Weak	Weak	5.00	6.00	0	0
Speed of stevedore's cargo loading/unloading	Weak	Strong	3.90	5.83	2	0
Connectivity/operability to rail/truck/warehousing	Medium	Weak	4.38	6.13	0	0
Port authority responsiveness to special requests	Medium	Weak	4.89	6.50	1	1
Incidence of cargo damage	Weak	-Weak***	4.56	5.75	0	0
Port security	Medium	Weak	5.64	6.25	0	2
Provision of adequate, on-time information	Medium	Weak	5.10	6.25	2	0
Terminal operator responsiveness to special requests	Medium	Medium	4.22	6.00	1	0

** Two of the seven ports did not have an adequate sample size from this user group for inclusion.

*** The relationship between the incidence of cargo damage and the overall port effectiveness rating was negative on the West Coast.

Key Findings for Supply Chain Partners*

* Supply Chain Partners are trucking companies, warehouse operators, and rail lines (but not those who provide other services to the port or terminal operators in this survey).

The criteria with the strongest influence on the East Coast for Supply Chain Partners were the availability of capacity and the efficiency of documentary processes. On the West Coast the common theme of “the need for speed” emerged with gate congestion, availability of labor (do they have to wait for someone?), the incidence of delays and the speed of stevedore's cargo loading/unloading all strongly influencing perceived overall service performance. Supply Chain Partners on the West Coast share this concern with the Shipping Lines using the West Coast ports as well.

Three criteria—invoice accuracy, ocean carrier schedule reliability/integrity, and the incidence of cargo damage had weak influences on perceived overall service performance on both coasts.

There were five criteria where some ports performed poorly (with low ratings of 3.50 to 4.40) while others performed better. These were the availability of labor (do we have to wait to find someone?), the incidence of delays, the speed of stevedore's cargo loading/unloading, the connectivity/operability to rail/truck/warehousing, and the terminal operator responsiveness to special requests.

There were eight areas where ports could invest to improve service to Supply Chain Partners, the most common (five ports) being the need to improve the accessibility to port premises for pick-up and delivery (gate congestion). Three ports could reduce the incidence of delays. The remaining six criteria could be invested in by one or two ports each; they are the availability of labor (do we have to wait to find someone?), the efficiency of documentary processes, the speed of stevedore's cargo loading/unloading, the port authority responsiveness to special requests, the provision of adequate, on-time information, and the terminal operator responsiveness to special requests.

There were four criteria that could be promoted by one or two ports. In all cases these were criteria that had a strong (2) or medium (2) influence on perceived overall service performance on the East Coast, but had weak (3) or medium (1) influence on the West Coast. Ports could potentially promote the availability of capacity, the efficiency of documentary processes, the port authority responsiveness to special requests, and port security.

Two additional criteria suggested by this user group for possible use in future surveys.

Comments from Supply Chain Partners

Of responses by 48 Supply Chain Partners, these two comments illustrate the feedback on service delivery and company competitiveness for this user group:

It's a little upsetting when we are trying to book appointments and there aren't any available, especially when you are not a local truck division.

Better process needed for drivers to inspect empty containers before accepting them; [the] current process penalizes drivers...

Context and Methodology for the Survey

Survey Approach

We developed two surveys, one for the East Coast with four East Coast ports listed and one for the West Coast with three ports listed. The surveys were administered over a six-week period between mid-May and end of June 2012.

Participating ports supplied user lists for direct solicitation of users, each supplying more than 550 names; these were cleaned to remove duplicate individuals and to ensure that each office location did not receive more than one survey, which reduced the contacts considerably. Subsequently, if a response was not received from that office location or the recruitment email was a bounce-back, a different person in the office was approached in a subsequent round.

In total, three rounds of surveys were undertaken over seven weeks. In all cases, a reminder email followed the recruitment email invitation one week later, and a second reminder the day before that round was closed. Each round took between 10 and 14 calendar days. All respondents accessed the survey via controlled token.

In order to augment the sample, we directly approached those who had participated in earlier pilot studies and had indicated a willingness to participate in future studies, as long as their offices were not already included. We also approached eight industry associations that had assisted in earlier studies and solicited respondents from those associations. All enquiries from respondents or potential respondents were replied to with a personal email from Dr. Brooks.

Participating Ports and Their Results

It needs to be noted at the outset that only three ports chose to participate, and therefore received reports based on their results; the remaining four ports in this report chose not to participate and so are not aware of their relative strengths and weaknesses as seen by user groups. As a result, non-participating ports will not have received the indications of where investment into aspects of service delivery will have the greatest payoff.

Support for the Survey

Supporting Industry Associations

Each industry association provided different types of support. Some sent email blasts to members advising them to contact us. Others wrote stories, with contact encouragement. Still others posted a link to us on our web site. We appreciate all the support received in getting responses to the survey. The supporters we'd like to thank are:

- Canadian Institute of traffic and Transportation
- Canadian International Freight Forwarders Association
- Canadian Manufacturers and Exporters (Nova Scotia Division)
- Intermodal Association of North America
- National Industrial Transportation League
- Shipping Federation of Canada
- Supply Chain and Logistics Association of Canada
- Trucking Industry Mobility and Technology Coalition

Port Performance Research Network

December 2012

Interested in Further Reading?

Already Published

North American Research

Brooks, Mary R., Douglas (Tony) Schellinck and Athanasios A. Pallis (2011). Port Effectiveness: Users' Perspectives in North America, *Transportation Research Record*, 2222, 34-42. DOI: 10.3141/2222-05.

Brooks, Mary R., Tony Schellinck and A. A. Pallis (2011). A Systematic Approach for Evaluating Port Effectiveness, *Maritime Policy and Management*, 38 (3), 315-334. DOI: 10.1080/03088839.2011.572702.

European Research

European Sea Ports Organisation (2012). European Port Performance Dashboard, http://www.espo.be/images/stories/Publications/studies_reports_surveys/espo_dashboard_2012.pdf, last accessed 7 November 2012.

Port Efficiency Research

Cullinane, K. (2010). Revisiting the productivity and efficiency of ports and terminals: methods and applications. In: C. Grammenos (Ed), *The Handbook of Maritime Economics and Business (2nd ed.)*, London: Informa, 907-946.

More on the Port Performance Research Network

http://citt.management.dal.ca/Research/Port_Performance_Research_Network/

We would like to thank the AAPA for its support/partnership and the participating port authorities that provided extensive support and worthwhile feedback, as well as the over 200 respondents who took valuable time to provide us with their insights based on their experience with port service. We believe this research will assist in improving the quality of service provided by ports now and in the future, and your contribution is very much appreciated.

If you have any questions concerning this report, please contact:

Mary R. Brooks
William A. Black Chair of Commerce
Dalhousie University
PO Box 15000
Halifax, NS, B3H 4R2 Canada
tel: (902) 494-1825 fax: (902) 494-1107
e-mail: m.brooks@dal.ca