Measuring Port Effectiveness in User Service Delivery

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Purpose

- To understand how users evaluate the ports they use

- To identify which attributes of port services are most important to users, and

- To identify the evaluation criteria by which users determine that a port's performance is satisfactory (or effective in meeting their needs).

This information can be used

- By relevant decision-makers—whether governments, port authorities, or service providers—to facilitate assessment of port service delivery,

- By users to provide feedback to ports, and

- By ports to fine tune operations to meet customers' expectations and to compete by allocating resources to where they will have the greatest impact.

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The Goal for Ports: Thinking About Supply Chain Improvements

① Identify your port's customers' and users' criteria for assessing service quality

② Evaluate the port's performance on both the criteria you control and what you influence

③ Determine what needs to be fixed based on those items of importance to the customer and <u>determinant</u> in their assessment of your port's service quality performance

④ Via information-sharing, coalition-building, and identifying financial support and sources, you should be able to help your tenants and suppliers to change services under their control

Identifying the Right Metrics
by User Type

- Extensive literature search = 80 criteria (unspecified users)

- Focus groups with users in Canadian ports

- Three studies (the next slide)

- User groups are mostly different in "importance criteria"

- They all also see satisfaction as correlated with customer service delivery (effectiveness).

**Efficiency
Doing Things Right**

**Effectiveness
Doing the Right Things**
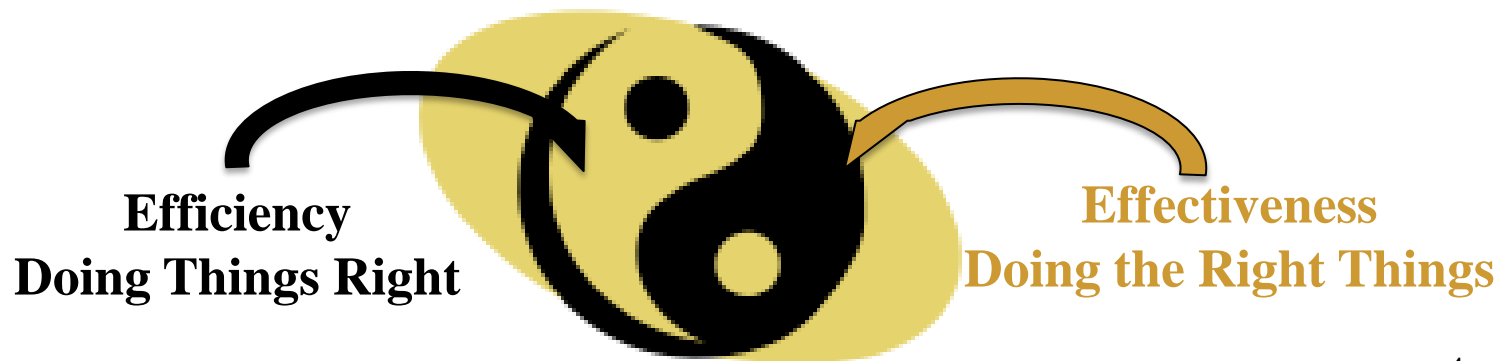
Research Phase 2: 3 Internet Surveys
(Phase 1 narrowed 80 criteria to the useful)

Canadian Port Users
3 Cdn 2 US

Same Instrument:
2 publications in 2011—
Maritime Policy and Management and *Transportation Research Record*
1 presentation: EconShip in Greece

American East Coast Port Users
5 US Ports

American West Coast Port Users
5 US Ports

Reduced/Modified Instrument
(to test the current instrument)

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Service Delivery Effectiveness Performance Measures

User Group	Criteria for Determining Service Quality Performance Effectiveness
Shipping line	19 specific criteria plus two cost criteria
Cargo owners & agents	11 specific criteria plus two cost criteria
Supply chain partners	15 specific criteria

Illustrative Measures

Cargo Interest Examples (5 of 11)	Shipping Line Examples (5 of 19)	Supply Chain Partner Examples (5 of 15)
Provision of adequate, on-time information	Provision of adequate, on-time information	Provision of adequate, on-time information
Terminal operator responsiveness to special requests	Incidence of cargo damage	Accessibility to port premises for pick-up & delivery (gate congestion)
Availability of direct service to destination	Timely vessel turnaround	Efficiency of documentary processes
Incidence of cargo damage	Connectivity/operability to rail/truck or warehousing	Ocean carrier schedule reliability/integrity
Choice of truck/rail/warehousing	Terminal operator responsiveness to special requests	Speed of stevedore's cargo loading/unloading

How It Works (1)

Platform: LimeSurvey hosted on its own web address on a secure Dalhousie server (not subject to the U.S. Patriot Act)

What do we measure?

- The overall performance rating of each port by their users on effectiveness of service delivery (7 point scale)

- Importance of each service criteria to the specific user group (7 point scale)

- The performance of up to three ports used by that user rated on those service criteria (7 point scale)

Other data collected?

- Type of user

- Usage data

- Open-ended concerns

- Company demographics

How It Works (2)

What do we get as outputs?

- The determinants of the effectiveness of service delivery score for each particular port (using NPE—normalized pairwise estimation)

- A gap analysis (importance minus performance) for each user

- Guidance for each port on its particular ratings and results

- Open-ended comments for each port

- Demographics of the survey participants

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Four Methodologies

1. Importance-Performance Matrix (Hooley et al. 2008)

2. Importance-Performance (I-P) Gap Analysis alone

3. Determinance of Rating on Effectiveness of Service Delivery

4. The combination of Determinance and I-P Gap Analysis

Hooley *et al* (2008: 407)

The first three have flaws…

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Significant Negative Gaps on the 4 Highest Importance Criteria
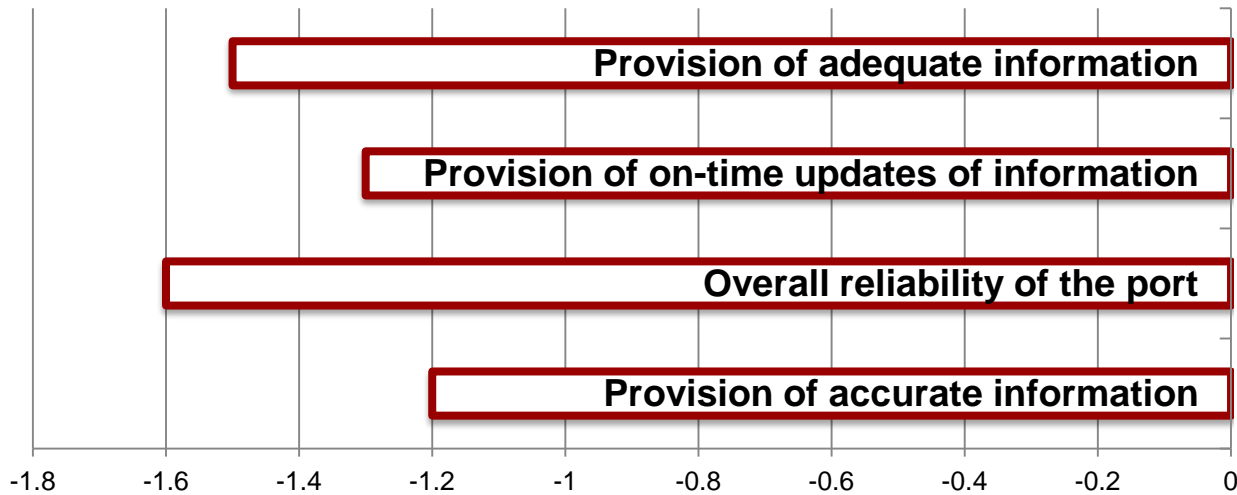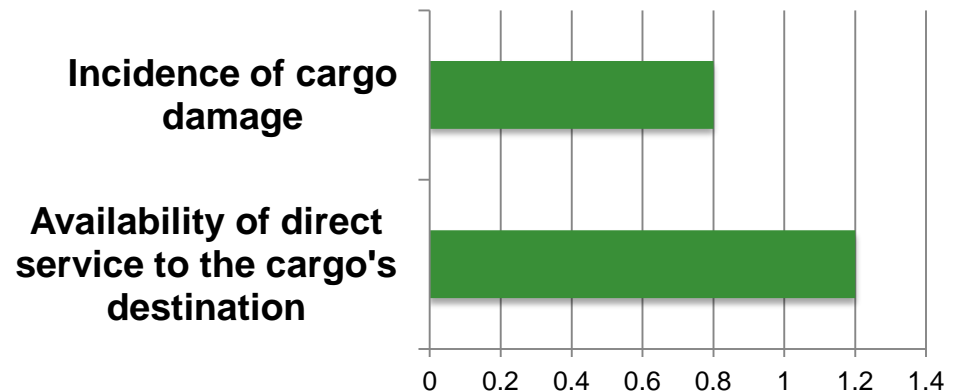

IP Gap Analysis: Example (Poor Overall Ratings)

Summary

- Significant negative performance on highest importance criterion
- Significant positive performance on unimportant criteria

Significant Positive Gaps on Less Important Criteria

Determinance of Attributes in Predicting Our Outcome Measures

- We determine where differences in perceptions of performance on specific attributes coincide with differences in overall performance (effectiveness of service delivery)

- If they coincide then we assume that perceptions on these attributes influence the overall performance measure

- Attributes with the greatest influence need the greatest attention in terms of resources

- Methodology: correlation called Normalized Pairwise Estimation

Method for Making Determinance-IP Gap Analysis Decisions for Each Port
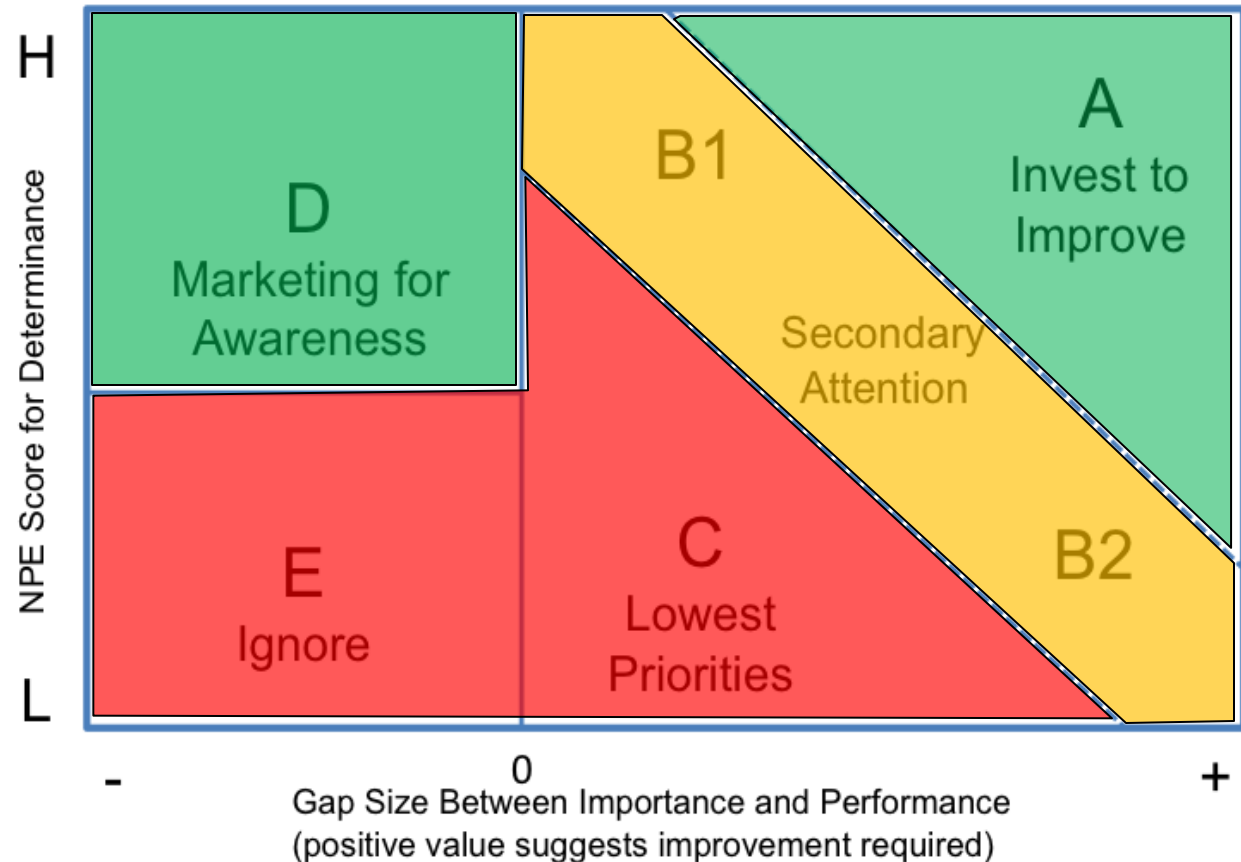
Illustrating the Problem for the Port of Yarmouth (with 1 subset of criteria)

Evaluation Criteria (Ranked by Gap size) n=xxx	Importance	Performance	Gap Size	NPE Score Effectiveness
Criterion A	6.50	5.07	-1.43	0.265
Criterion B	6.27	5.08	-1.19	0.220
Criterion C	6.04	4.89	-1.15	**0.332**
Criterion D	6.11	4.96	-1.15	**0.295**
Criterion E	6.13	5.37	-0.76	0.213
Criterion F	5.40	4.90	-0.50	**0.334**
Criterion G	5.86	5.45	-0.41	0.238
Criterion H	6.03	5.67	-0.36	0.202
Criterion I	5.97	5.67	-0.30	0.257
Criterion J	4.48	4.60	0.18	**0.276**
Criterion K	4.89	5.07	0.18	0.135
Criterion L	5.45	5.76	0.31	0.178

Determinance/Performance Gap Analysis for the "Port of Yarmouth" for 1 user group
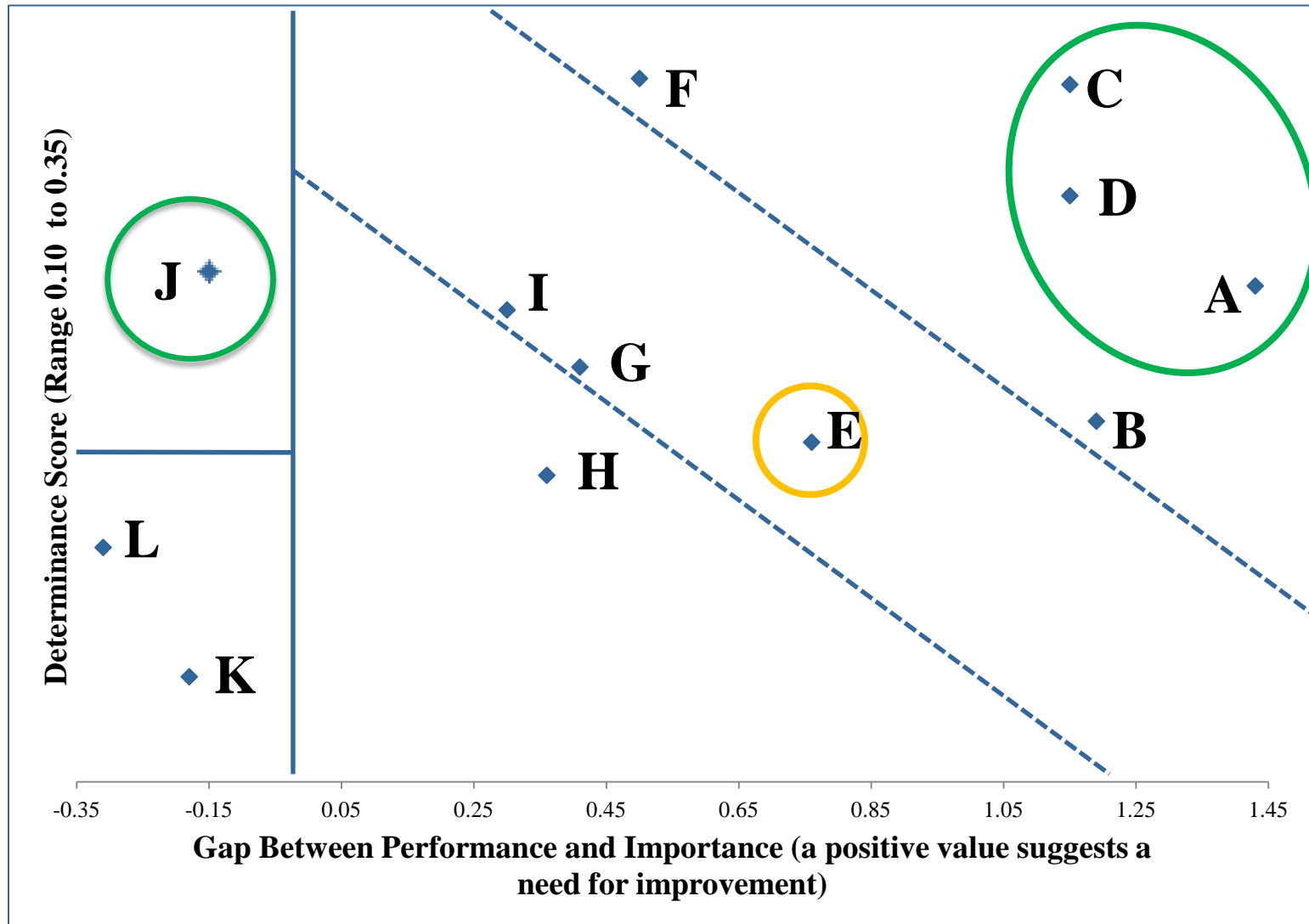
The AAPA Customer Service Initiative Vision

- An independent third-party assessment of use to ports in effecting change and improving service delivery in supply of port services.

- An individualized report to each port that provides "best practice" scores and the port's scores to provide context to user "importance" **and that** enables benchmarking for assessing resource allocation

- Each port gets its own report; AAPA gets a "state of its ports" report

Deliverables for the AAPA Port Customer Service Initiative

- A standardized report provided to individual participating ports containing each port's scores on its own performance plus the best practice score on each criterion. (Data discussion and the port size and region range comparators are provided.)

- A standardized report containing the open-ended responses received from port participants and the demographics of the respondent groups.

- An AAPA Customer Service Initiative Report including key issues for all users by user group, general recommendations and advice provided to all port members based on the total dataset. (A draft report will be provided to the Executive Committee before a final report is written.)

Determinance –
IP Gap Space for each group and Key Findings

Port Effectiveness Results for Shipping Lines*

Determinance - IP Gap Space for Yarmouth

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

Key Findings

For shipping lines, three key criteria—terminal operator responsiveness to special requests (A), cargo damage (B) and Criterion G are identified for immediate investment for improvement. Criteria Q and O are candidates for marketing promotion due to positive performance gaps and high determinance. Criteria J, D and C may also warrant investment.

Gap Size

Importance

Performance

Best Practice Score

NPE Score (Determinance)

2 Evaluation Scores by Container Shipping Lines for the Port of Yarmouth

	Evaluation Criteria (Ranked by Gap size) n=xxx-yyy	Gap Size	Importance	Performance	Best Practice Score	NPE Score: Effectiveness of Service Delivery
A	Terminal operator responsiveness to special requests	0.78	5.7	4.9	5.2	**0.34**
B	Incidence of cargo damage	0.76	5.9	5.1	5.2	0.24
C	Timely vessel turnaround	0.57	6.0	5.4	5.5	0.19
D	Connectivity/operability to rail/truck or warehousing	0.34	6.2	5.8	6.0	**0.30**
E	Provision of adequate, on-time information	0.34	6.0	5.7	5.9	0.14
F	Criterion F	0.32	6.1	5.8	5.9	0.25
G	Criterion G	0.27	5.2	4.9	5.1	**0.40**
H	Criterion H	0.27	5.9	5.6	5.7	0.16
I	Criterion I	0.27	5.7	5.4	5.5	0.26
J	Criterion J	0.25	5.6	5.3	5.4	**0.37**
K	Criterion K	0.25	5.4	5.2	5.4	0.27
L	Criterion L	0.21	5.6	5.4	5.7	0.14
M	Criterion M	0.21	5.4	5.2	5.3	0.24
N	Criterion N	-0.24	5.6	5.8	6.2	0.12
O	Criterion O	-0.24	5.4	5.7	5.8	0.27
P	Criterion P	-0.28	5.3	5.7	5.8	0.22
Q	Criterion Q	-0.42	5.4	5.7	5.9	**0.34**
R	Criterion R	-0.52	5.2	5.7	5.8	0.14
S	Criterion S	-0.54	5.2	5.7	5.9	0.12

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Open-Ended Comments on Port Performance Provides Feedback

For oversize/weight cargo [Port of _____] has very good inland capability and vessel ro-ro service; however charter vessel availability/cost is a problem. Also port infrastructure is a limiting factor.

Extremely important that port efficiency is at highest possible achievable level. Speed of turnaround times, cost effectiveness & inland distribution capabilities are critically important.
Truckers seem less knowledgeable regarding the container pick up & delivery so takes more time to deal ex [Port of _____].

Excellent infrastructure and ocean connections but the inland clearances are a significant disability.

We are a specialized trucking company ... The [Port of _____] is not realistic with their hours of operation; they try to serve an industry that operates 24/7 with basically office hours. ... Some days our trucks spend in excess of 4 hours waiting to get into the port and load/unload.

Timetable

- Survey execution: mid-May to end-June 2012

- Data analysis: July-August 2012

- Individual port reports to ports end of Sept. 2012.

- Draft report to AAPA Executive Committee for review at fall meeting.

- Final report to AAPA December 2015.

Conclusions About This Methodology

- Survey methodology is viable if two or more ports participate as the personal approach using port customer databases works better than the impersonal "please let us know…"

- Useful/different information obtainable from all three groups

- Sufficient data is collected in a ten-minute survey

- It is necessary to calculate and use derived IP gaps and determinance when assessing candidates for investment

- Qualitative data complements quantitative data providing rich feedback for port managers

Possibilities for Other Times, Modes and Geographies

- Once a port has experience with the process and received its individual report, additions to the survey can be made to consider special issues ports might wish to explore.

- New criteria might be added if desired.

- The types of those surveyed, such as other supply chain partners, could be expanded.

- Developmental work could include other types of port activities in addition to container shipments.

- The approach is applicable to other modes of transport and other types of nodes in transport networks.

- The intention is to use this for ports on other continents.

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Questions?
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With the Reports, Port Managers Can Improve Port Performance if…

- They know the **importance/relevance** of attributes
- They know user's **perceptions** of port performance overall (e.g., effectiveness in service delivery) and by attribute (e.g., cargo handling)
- Therefore, they identify **performance gaps** of importance to users
- They uncover the **determinance** of attributes for effectiveness in service delivery
- They can combine this information using a **Determinance – IP Gap Analysis** to identify where to concentrate service delivery improvement efforts. (translation: where to best allocate resources!!)

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