UNCTAD
Ad Hoc Expert Meeting on Assessing Port Performance

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Measuring Effectiveness In Port Service Delivery

by

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Measuring Effectiveness in Port Service Delivery

Examples of Efficiency and Effectiveness Measures in Ports

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Efficiency

Financial

- Growth in profitability
- Cap. Expenditures as % of gross revenue

Non-financial

- Total direct full-time jobs per 000 tonnes of cargo
- Loss-time injuries per 100,000 working hours

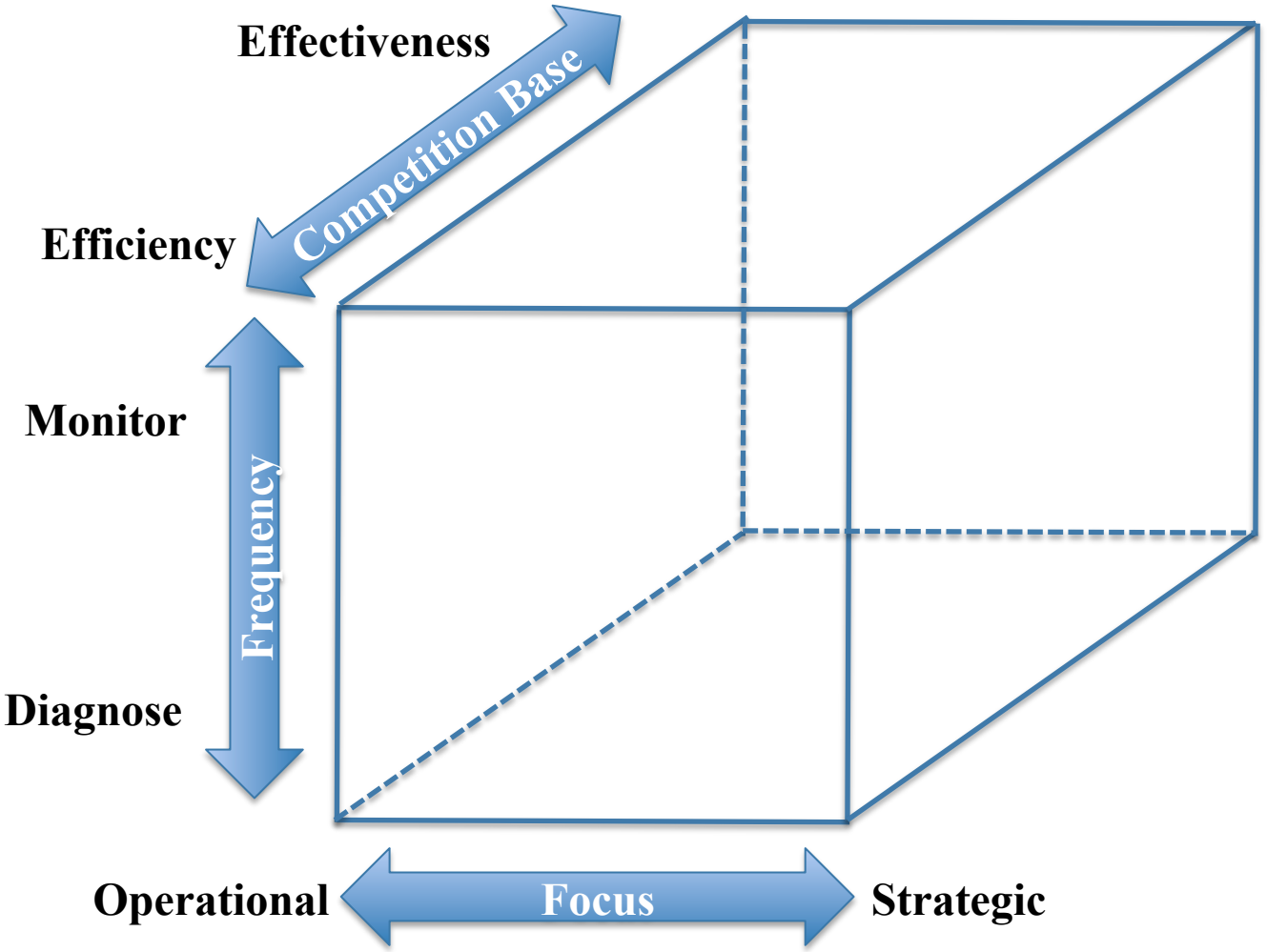
Utilization/Productivity

- TEUs per berth metre or per crane
- Tonnes per hectare
- Container lifts per crane hour of operation
- Cargo tonnes handled per vessel hour at berth

Effectiveness (measuring service perceptions)

- Carrier rating on satisfaction with terminal operator
- Supplier complaints per month to port authority
- Cargo interests' rating on satisfaction with quality of cargo-handling
- Gate congestion (is/is not excessive)
- Hand-off is timely (very poor to very good)
- Cargo damage is low/high

Why Are You Measuring Performance? (Answer Drives Choice of Metrics)



Source: Variant of Griffis et al. (2007). "Aligning logistics performance measures to the information needs of the firm." *Journal of Business Logistics, 28*, 2, 35.

What Does Transport Canada Choose to Measure? Fluidity

7 Intermodal Indicators (containers)	Units
Truck turnaround time	Minutes
Vessel turnaround time	Hours
Vessel turnaround time per TEU	Seconds/ TEU
Average vessel call size	TEU
Berth utilization	TEU/ m. of workable berth
Import container dwell time	Days
Gross port productivity	TEU/ hectare
Gross crane productivity	TEU/ gantry crane
4 Bulk Indicators	**Units**
Vessel turnaround time	Hours
Average vessel call size	Tonnes
Berth occupancy rate	Percent
Gross berth productivity	Tonnes/ hour

Source: Transport Canada *Transportation in Canada 2012*, Table M-30A.

The AAPA Customer Service Initiative Vision (Brooks & Schellinck, 2012)

- 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

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100TH AAPA 1912-2012 American Association of Port Authorities

Identifying the Right Metrics by User Type

- Extensive literature search = long list of criteria (unspecified users)
- Focus groups with users in Canadian ports
- Three pilot studies to develop short list of criteria
- User groups are mostly different in "criteria of relevance"
- They all see satisfaction as correlated with the score on effectiveness of customer service delivery.

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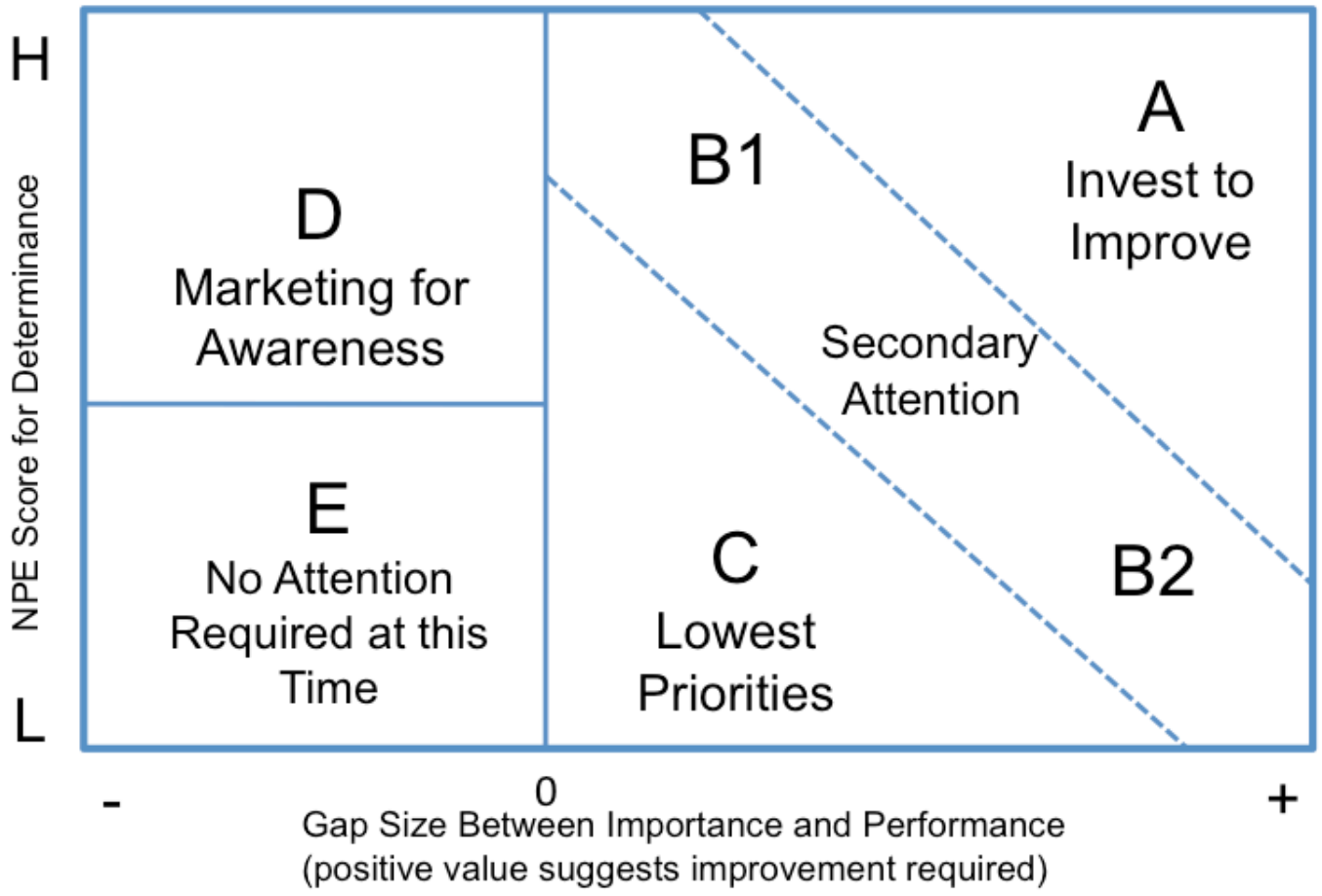
Illustrative Measures

Cargo Interest Examples (5 of 11 Criteria)	Shipping Line Examples (5 of 19 Criteria)	Supply Chain Partner Examples (5 of 15 Criteria)
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

What We Do With the Effectiveness Data Collected



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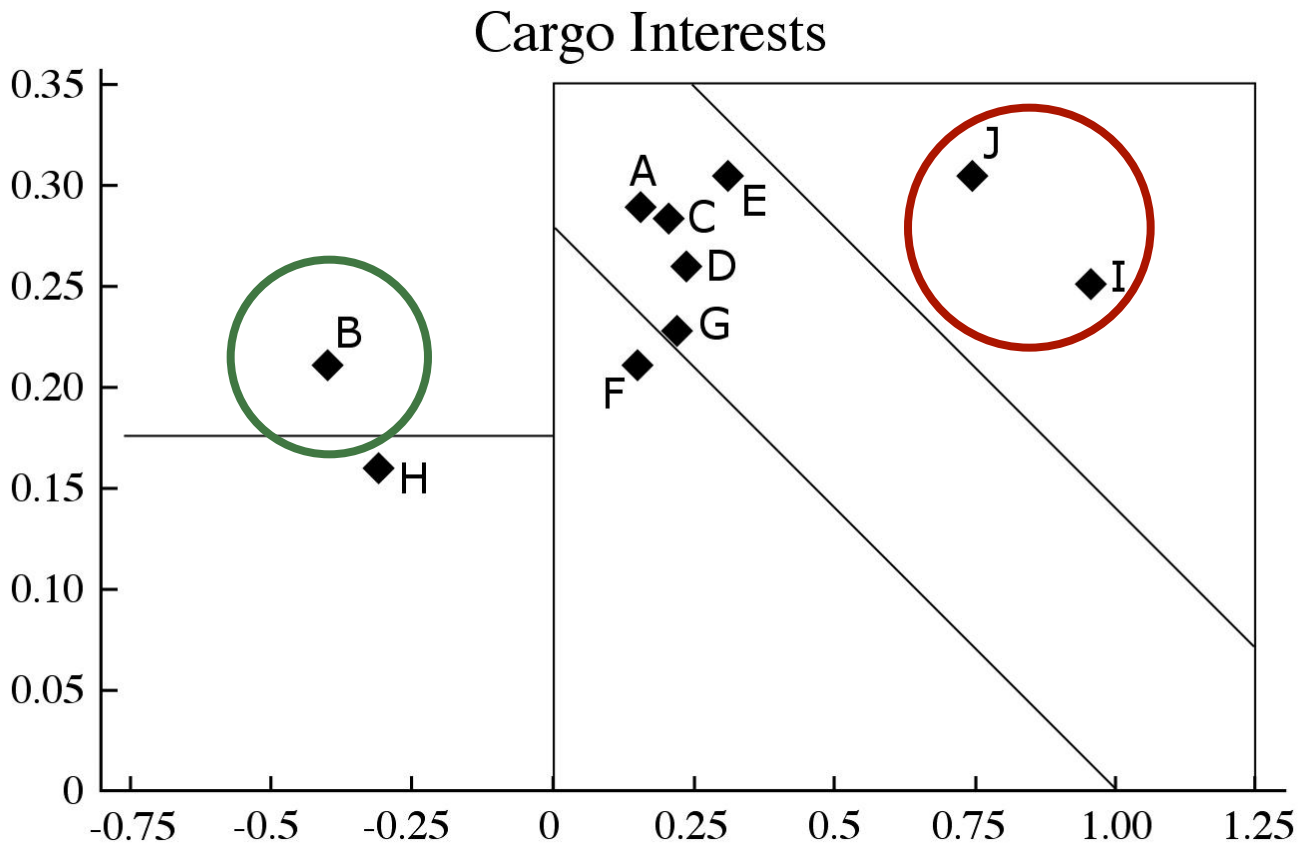
Evaluation Report Card by Cargo Interests for the Mystery Port on 9 Effectiveness Criteria

	Evaluative Criteria	I-P Gap	Performance Mean	Lowest	Highest	NPE	Relative Score
A	Ability to develop/offer tailored services to different cargo interests	0.16	5.16	4.21	6.09	0.289	51%
B	Choice of rail/truck/ warehousing companies	-0.40	5.96	5.25	6.12	0.211	82%
C	Capability of employees (can they accommodate our needs?)	0.21	5.63	4.50	5.89	0.283	81%
D	Connectivity/operability to rail/ truck/warehousing	0.24	5.80	5.19	6.11	0.259	66%
E	Port authority responsiveness to special requests	0.32	5.37	4.55	6.1	0.305	50%
F	Availability of direct service to the cargo's destination	0.15	5.77	5.38	6.33	0.211	41%
H	Port security	-0.31	6.00	5.50	6.61	0.158	45%
I	Provision of adequate, on-time information	0.96	5.50	5.00	6.08	0.250	46%
J	Terminal operator responsiveness to special requests	0.75	5.19	4.44	5.9	0.304	49%

Determinance I-P Gap Space for Cargo Interests for the Mystery Port

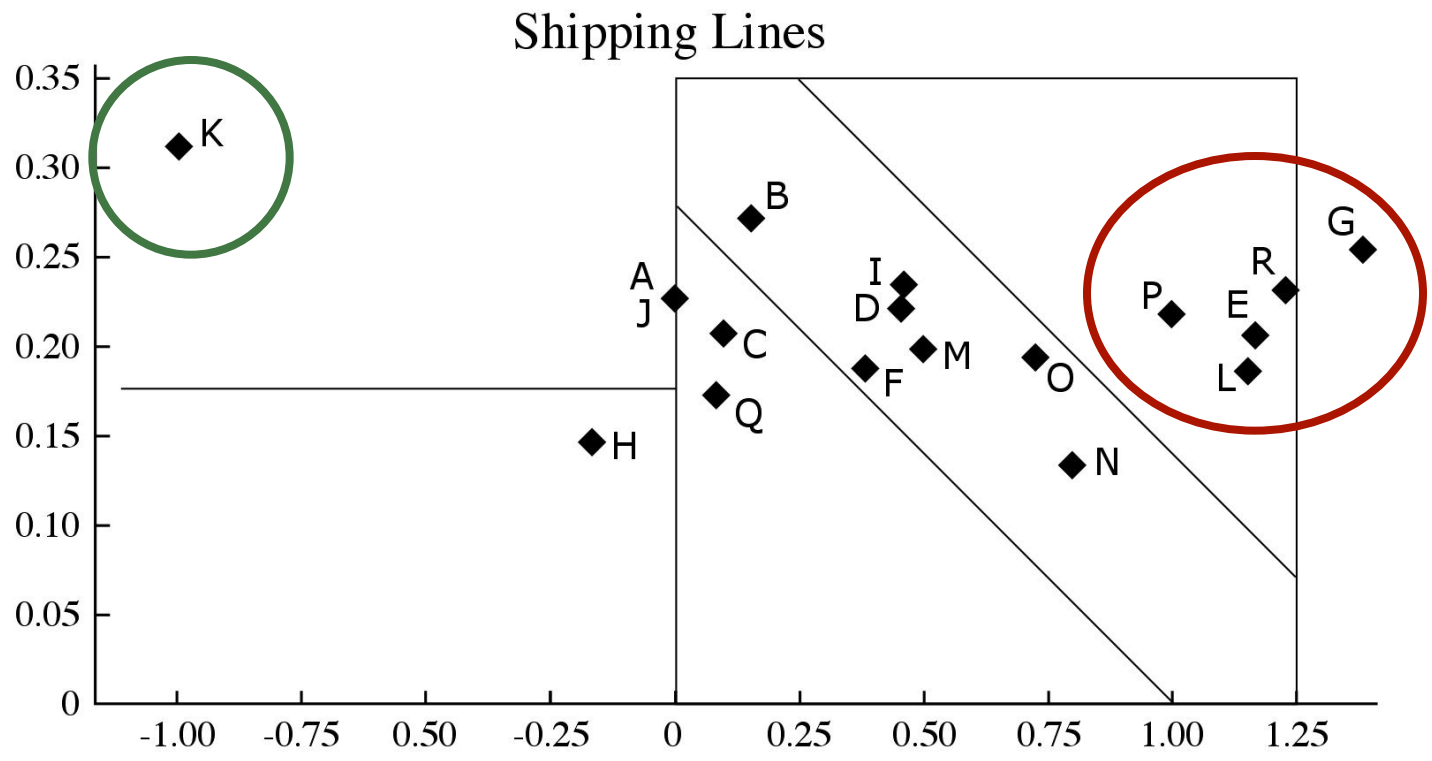


Note: This graph shows 10 of 11 criteria.

Evaluation Scores by Container Shipping Lines for the Mystery Port (on 10 of 18 Criteria)

	Evaluative Criteria	I-P Gap	Performance Mean	Lowest	Highest	NPE	Relative Score
B	Availability and capability of dockworkers	0.154	6.08	4.29	6.08	0.271	100.0%
D	Connectivity/operability to rail/ truck/warehousing	0.455	5.64	4.29	6.22	0.221	69.9%
E	Port authority responsiveness to special requests	1.167	4.92	3.00	6.18	0.206	60.4%
F	Incidence of cargo damage	0.385	5.23	5.22	5.80	0.187	1.7%
G	Incidence of delays	1.385	5.15	4.29	5.80	0.253	57.0%
I	Provision of adequate, on-time information	0.462	5.38	5.14	5.89	0.234	32.0%
K	Quality of rail/truck/ warehousing companies	-1.000	5.90	5.14	5.9(	0.311	100.0%
N	Sufficiency of size of hinterland	0.800	4.80	4.73	6.30	0.133	4.5%
P	Timely vessel turnaround	1.000	5.50	4.64	6.11	0.218	58.5%
R	Terminal operator responsiveness to special requests	1.231	5.00	4.83	6.08	0.231	13.6%

Determinance I-P Gap Space for Shipping Lines for the Mystery Port



Note: This graph shows 18 of 19 criteria.

Some Thoughts (1)

- A similar approach used to measure **supply chain partner** effectiveness demonstrates that Mystery Port is the **benchmark best practice performer** on most evaluative criteria.
- Making ports attractive as part of a routing option may be about focusing on responsiveness and efficient goods transfer processes for the customers' customer (cargo interests); focus on what will work best for cargo and the lines will follow
- Best practices are revealed by attribute and user type; if a port's target customer is the shipping line, it will make a different set of decisions than if it aims to provide quality service to cargo owners like Wal-Mart. So the choice of response to performance evaluation depends on purpose: monitoring or diagnostic, strategic or operational, efficiency or effectiveness.

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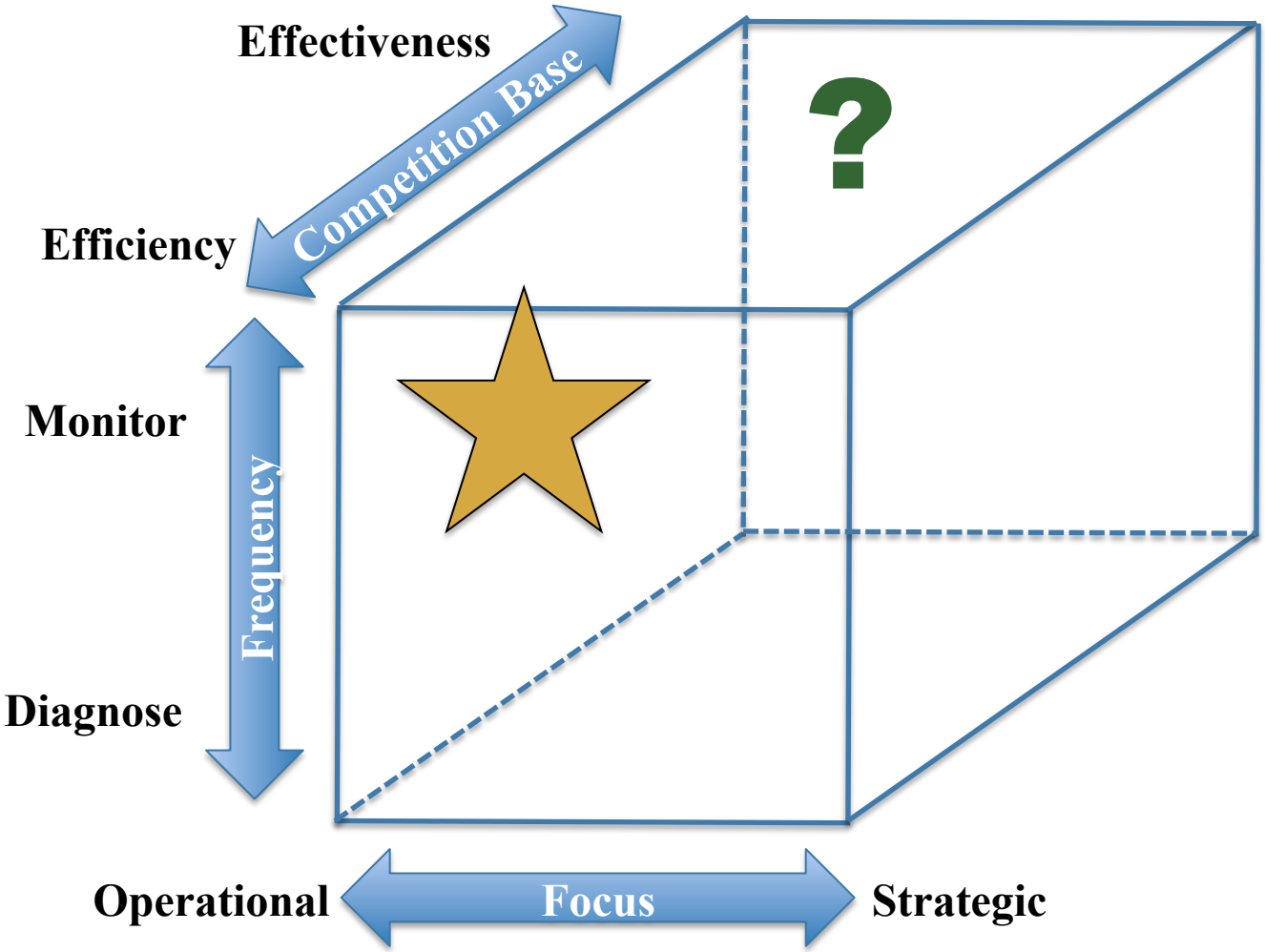
One focus for UNCTAD: monitoring, operational, efficiency

Two Roles for UNCTAD?



Source: Variant of Griffis et al. (2007). "Aligning logistics performance measures to the information needs of the firm." *Journal of Business Logistics, 28*, 2, 35.

Another Option: Measuring Effectiveness Using Executive Opinion

The annual *World Competitiveness Yearbook* uses Executive Opinion Surveys to evaluate countries and their competitiveness on several constructs and thus capture the intangibles that lead to assessment of the country's competitiveness.

Such a process could be used by UNCTAD to capture effectiveness measures through cooperation with national level shipowner associations and cargo interest groups.

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Thank You!
Questions? Answers!

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