Profit Engine on the Rails:
Measuring Railroad Operations Efficiency

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Overview

- Definition of Efficiency
- Financial v. Operational Efficiency
- Measuring Operational Efficiency
- What to Accomplish
- Principles for Measuring Operational Efficiency
Definition of Efficiency

Efficiency: noun

1. the state or quality of being able to accomplish something with the least waste of time and effort

2. The ratio of the work done or energy developed by a machine, engine, [process, operation], etc., to the energy [resources] supplied to it, usually expressed as a percentage

Dictionary.com

Efficiency concerns how well inputs translate into outputs
The very-old economy UNION PACIFIC is just as efficient (or more) at making money as new-economy icons Apple and Google.

Profit Engine on the Rails
Fortune, Issue 6.15.15, pp. 210-220

As congestion eases, the speed of its trains—a crucial measure of efficiency called “velocity”—is starting to improve. ... Each 1 mph increase eliminates the need for as many as 200 locomotives.

CANADIAN PACIFIC ANNUAL REPORT 2014

Financial Expectations for 2015
The company expects revenue growth to be 7-8%, operating ratio below 62%

Financial Efficiency means turning sales into profits while Operational Efficiency means accomplishing something with minimal resources.
In railroading, the best index of efficiency is the ton-mile cost.

The ton-mile cost is a much truer basis for comparison of operating efficiency than the mere operating ratios themselves. ... The relative freight efficiency of two railroads is in the inverse ratio of their ton-mile costs.

Lowering the ton-mile cost not only increases the net earnings from existing traffic but increases the share of competitive traffic secured. The increased volume of traffic in turn reduces the ton-mile cost and still further increases the competitive efficiency.

Moody’s made the case that ton-mile cost is a better measure of (Financial) Efficiency than the widely touted Operating Ratio.
Interest in Railroad Operational Efficiency is Nothing New

In the 1910s, operational efficiency was a hot topic among investors in over 200 Class I railroads and the ICC.


people.hofstra.edu/geotrans/eng/ch3en/conc3en/usrail18402003.html
Measuring Operational Efficiency

Performance measures mandated by the U.S. government focus on network fluidity and are internally focused.

www.railroadpm.org/home/rpm.aspx/
Stakeholders to Operational Efficiency

Railroad Stockholders (Bondholders)

Railroad Employees

Railroad Passengers / Customers

What constitutes operational efficiency depends on viewpoint
Operational Efficiency: Accomplishing “Something” with Minimal Resources

“Something” Offered by Railroads

Focus on how?
- Blocks
- Trains
- Yards
- Crews
- Locomotives

“Something” Needed by Customers

Focus on
- Where?
- When?
- How Much?
- Not How?

There’s a real danger that not only focus, but also the very “something” that railroads offer may not align with customer needs.
Operational Efficiency Example

- In traveling from my home near Cincinnati to Chicago, a certain airline routed me from Dayton to Atlanta to Chicago
- Flights ran on time
- I took advantage of a good restaurant and airline lounge while waiting in Atlanta
- But …
  - What was my objective?
  - How did Atlanta contribute to that objective?

Efficient routing from a hub-&-spoke perspective is extremely poor from a customer needs standpoint.
Takeaway: Operational Efficiency needs to Take into Account the Customer Viewpoint

Design Phase

- Convenient locations to enter/exit transportation system
- Right links
- Right timing of service
- Coordinated connections (including intermodal)
- Balance between price and cost

Operations Phase

- On-time delivery or hand-off
- Reasonable cost control

Efficient operations that do not meet customers’ needs are of questionable usefulness
Principles for Measuring Operational Efficiency

- Include measures that reflect value from the standpoint of stakeholders, especially the PASSENGER or CUSTOMER
- Measure efficient execution of plan, but also measure extent to which network design and plan support customer needs
- Adopt measures to reflect the trade-off between cost and service

By adding customer focused metrics to existing, internally focused measures of operational efficiency, railroads have the potential to enter into a virtuous cycle that rewards all stakeholders.
Thank You!

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