Are you measuring the right metrics to optimize logistics processes?

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The significance of logistics and related activities in physical distribution of materials is well acknowledged. However, there is a growing need to focus on how logistics and other operational activities can be made more effective. Logistics typically amounts to four to five percent of total expenses for manufacturing firms, so management is bound to pay attention.

Logistics costs matter not only at the company level but at national and regional levels. They amount to a sizeable fraction of a nation’s GDP. Broadly, at the national level the focus is more on logistics performance parameters such as cost, safety, efficiency, and carbon footprint. At the company level, firms have inevitably focused on logistics cost because of its impact on the bottom line. But some organizations are looking beyond simple cost measures and monitoring a range of other parameters that affect performance as well as cost. Transportation, for instance, is one key area where unnecessary supply chain cost can be incurred. Inaccuracies in load planning lead to longer cycle times and higher operating costs. In this paper we will develop a micro-level analysis of various components of logistics operations that influence business objectives.

With little remaining to cut in production costs, and most companies having ready access to technology, logistics is no longer merely a functional or non-value added operation. It has, to an extent, become a cost-optimizing strategy for intelligent enterprises. Logistics is so integral to an organization that changing one aspect of it can impact the entire enterprise. For example, network optimization has far-ranging benefits beyond cost savings. It influences the breadth of a company’s functions from warehouse design to carrier management, helping to streamline the entire operation.

To manage logistics costs, some companies try technology-enabled solutions; others seek the help of an experienced partner. Some managers consider it a safe option to hand off logistics operations to a solution provider who knows the game well. This is evident from the growth of the 3PL and 4PL industry,
where service providers have capitalized on a huge market opportunity. Companies that could invest in their own logistics infrastructure did so, and the others moved on to external providers. Unfortunately, however, many companies have fallen short of their savings goals despite these initiatives. So, whether for self-managed or outsourced logistics, the fundamental question becomes: which process-level factors need closer attention in order to improve operational performance?

**Complexity is the enemy**

Logistics operations are complex and the parameters are difficult to measure. Challenges include collecting error-free information from routine processes and reconciling financial entries related to logistics. The choices an organization makes in reporting logistics costs under various overheads only add to the difficulty. Tracking and measuring costs allocated between the company and its suppliers when it comes to inbound and outbound logistics is another gray area.

Complexity also lies in the design and layout of the logistics operation. One Fortune 500 healthcare services company manufactures a variety of medical products and provides them to more than 40,000 locations each day; nearly a third of all products used in hospitals and surgery centers flow through its logistics facilities. The company manages one of the largest private fleets in the world to deliver it all. Yet despite its reach and experience, it found itself struggling with low shipment consolidation and high transportation costs. It lacked an effective means to maximize loads going to all those locations, wasting truck capacity and driving up fuel and other costs.

Fortunately, none of these challenges and uncertainties negates the maxim: “Whatever is monitored can be measured and whatever is measured can be improved.” Any method a company engages to track and measure the logistics function can reveal areas for improvement, but in order to really tame the supply chain, businesses must focus on reducing these and other complexities arising within the network. Some are turning to detailed analytics frameworks, hiring consultants, or attempting technology solutions, but these alone cannot manage the problem. It takes a more holistic approach to understand and manage logistics and associated costs. A combination of analytics that extract data from deep in the network to determine where gaps and complexities lie; better technologies that provide real-time, actionable insight; and smarter processes that manage end-to-end workflow and governance—all at lower cost—would be the magic formula.

**Performance measures are the foundation for initiating logistics operations transformation**

While metrics are instrumental to performance monitoring, too much data—or the wrong kind—might only get in the way. Logistics managers therefore need to determine what, specifically, to monitor and how to improve it.

To highlight how logistics costs influence returns, an experienced service provider mathematically reduced the transportation costs of a company with assets of $150 million and net income of $10.5 million by 10%, while holding constant warehouse and other logistics costs. Applying the DuPont approach in Figure 1 resulted in:

- Net income increased by approximately 5%
- Profit margin increased from 7% to 7.25%
- ROA increased from 7.25% to 7.5%
- Transportation costs decreased from 4% to 3.6% of sales

Approximately the same figures would be true for most companies with a similar cost structure.

**Figure 1**: The DuPont identity showing breakdown of Return on Equity
The above example starts with a single cost element and finds results in the company's financial performance. The converse logic leads to a fine-grained view of factors that influence logistics costs and other parameters, which in turn have an effect on the company's business performance.

The four broad categories by which companies evaluate logistics performance measures are:

1) Logistics cost (e.g., expenses and return on assets)
2) Logistics productivity (e.g., orders shipped per hour and transport container utilization)
3) Logistics quality (e.g., inventory accuracy and shipment damage)
4) Logistics cycle time (e.g., in-transit time and order entry time)

The drilldown in Figure 2 depicts how a company can get to ground-level detail and improve on the business parameters that make a huge difference in profitability. The healthcare major mentioned earlier took a similar process drilldown approach to realigning its network. It examined a selection of representative period data to gain a view of its actual transportation scenario. Then it analyzed a consolidation strategy for converting low-weight less-than-trailer-loads (LTLs) to high-weight LTLs, together with a mode shift from LTLs to trailer loads (TLs). The combination revealed $1.9 million (13% of the baseline freight cost) in potential annual cost savings. Figure 2 illustrates the relationships among these cost elements.

Apart from the measures that focus on profitability, companies should also spend time, effort and money in building sustainable and environment-friendly logistics systems. This requires measuring and improving parameters such as the safety of the logistics system and its carbon footprint. One example of how safety can be measured is to track the number and the cause of accidents on a daily, weekly, and monthly basis. Possible ways to improve this metric (i.e., reduce the number of accidents) include assessing the driver's health before a long haul, tracking drunken driving cases at the company level, and checking the condition of the vehicle before a long haul.

Some of these “beyond profit” metrics can be enforced by companies only when there is monitoring and tracking at the industry or government level. Industrial bodies for logistics have a pivotal role to play in the development of logistics metrics. For an industry that is quite fragmented across the globe—barring a few big players—the role of a central monitoring body is all the more important.

![Figure 2: Metrics tree of transportation cost](image-url)
Some of the issues and factors a central body can monitor and improve include:

1) Establishing processes and systems for handling unskilled labor in logistics sectors. This can be done through training and skill development or establishing central or government institutes to train and improve skill levels, etc.

2) Developing policies and rules around managing the carbon footprint and establishing rewards and penalties for compliance and non-compliance with these policies.

3) Collecting and analyzing data from various companies and industries and making meaningful interpretations of it.

4) Collaborating with bodies such as traffic police, roadways departments, and healthcare entities, etc. to issue and implement strict rules regarding driver safety and related issues.

5) Tracking and monitoring details related to maintenance and upgrade requirements and infrastructure needs with respect to roadways, railways and port facilities.

Above all, there is a need for standard metrics related not only to logistics costs but to a wide range of parameters at the company and the industry level. This would not only bring uniformity into the logistics industry but also ensure improvement in the logistics sphere.

Later is too late

As the complexity of modern logistics and transportation continues to increase, no enterprise or country can afford to wait until its proliferating supply chain grows out of control before grappling with all of the moving parts. Nor can it expect a technology solution alone to predict the unexpected, or analytics to resolve deep-rooted process problems in its logistics operation.

Companies determined to outcompete must take a coordinated approach aimed at improving global effectiveness, reducing costs, and maintaining the long-term process improvements required to sustain savings. Driving such a comprehensive program starts with truly understanding the key performance measures and their impact on the business outcomes of costs and transportation cycle times.

Since prices for input materials and services remain volatile, it is imperative for organizations to deploy a framework for understanding key drivers of cost and performance, and focus their efforts on optimizing such drivers. A sound measurement discipline at the very foundation of logistics will support lasting process improvement.
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