Digital Transformation of the Fuel Supply Chain

By Rob Harshbarger

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Today's increasingly complex supply chain creates significant efficiency and profitability challenges for the oil and gas industry. Continued network restructuring and consolidation, increased use of third-party products and haulers, and the ongoing drive toward higher customer satisfaction create an intricate, interconnected dynamic where operational problems at one business quickly impact partners and adjacent organizations.

Operational pitfalls

In the downstream fuel business, where there are dozens of players, hundreds of product codes, and multiple back-office systems, ensuring that in any single transaction, that everyone means the same thing — even when they use the same words — is almost impossible. Now consider the thousands of other transactions happening simultaneously, and you can see how misunderstandings and errors slow fuel buying, selling, and lifting processes. There are three significant throughput-related challenges that carriers, terminal owners, and buyers face at the terminal:

1. Ensuring compliance when onboarding drivers and transports.
2. Virtually eliminating delays in customer setups.
3. Successfully translating terminal product codes from the BOL into back-office material codes.

Each decreases throughput in the supply chain and negatively impacts revenue. Let's take a closer look at each challenge.

Onboarding

Today, the process of onboarding a driver or clearing a transport at a terminal can be time-consuming, taking days or weeks, delaying the ability to load product. It is often a manual process, completed through emails and faxes, opening up the potential for increased costs and delays due to human error. Beyond the lack of efficiency, the process lacks information security, which can lead to compliance issues. Once the onboarding process is complete, carriers and drivers could still face delays at the rack due to a lack of communication regarding lockouts from expired training or documentation. Sending a driver to the terminal only to find out they are unable to load wastes time and money.

Customer setups help keep the fuel supply moving, but it can be a challenge to meet your customer's needs and expectations when communication breaks down. Even after a customer is successfully loaded into the terminal automation system, the information must be accurately delivered back to the fuel buyer. Delays in receiving lifting numbers translate to delayed sales and revenue.

Communicating correct lifting numbers to fuel buyers and haulers is also critical. Consider a scenario where a carrier lifts product using the wrong lifting number. The lifted product is delivered to the wrong location, which creates major issues with matching BOLs to delivery receipts and invoices, often resulting in hours of manual reconciliation.

Product mapping

Currently, many fuel professionals manually convert their partners' product codes to their own product codes, spreadsheet by spreadsheet, line by line. The data entry is slow, labor-intensive, and prone to error. Those errors can lead to issues in reconciling BOLs, invoicing, and ensuring contract compliance, and those problems can lead to revenue leaks, impacting the bottom line.

More control means more efficiency

Here's where digital transformation makes a big impact. Collaborative, online systems streamline data entry, ensure accurate and consistent data, integrate more easily with existing information systems, and ultimately, help you be more safe and secure. Digital processes are also faster than paper-based systems, helping improve customer satisfaction. By sharing data online, you can reduce the onboarding process to just a few hours.

Once automated, other aspects of fuel marketing become more efficient as well. Electronic communications with suppliers — such as submitting requests for loading numbers or carrier access — will speed up the process. Digital carrier communication is also simplified; sharing loading numbers and destinations and verifying a driver's lockout status online helps prevent wasted trips to the terminal.

By moving business functions online, terminal throughput and customer satisfaction can be improved, and fewer costly mistakes experienced.

Transformation headwinds

While greater communication and coordination obviously benefit all involved, establishing an all-governing communication standard is easier said than done.

Unfortunately, our industry is unprepared to face this disruption. Less than half of refiners polled in a study said they are mature in digital technology deployment, and 60% said they intended to spend more on digital that year. There is additional research showing only 9% felt their company was doing digital transformation at scale. The majority are making incremental updates but not making any major changes.

The march of technology is unrelenting. Fuel buyers and sellers now use sophisticated software to manage their data and business decisions. Increasingly, terminal operations are centralized and managed remotely. This puts carriers in a difficult position: with multiple customers using multiple data management platforms, how can they maintain accuracy and flexibility while working to speed data conversion?

Many terminal operators recognize the technology trendline and are looking to leverage digital transformation. From onboarding to loading to constant communication, digital supply chain transformation gives terminal owners control, letting them determine how, when, and with whom data is shared.

Digitized benefits for all

Digitization of the supply chain will be a key factor in taking the industry to a new level of responsiveness and efficiency that benefits all.

Terminal operators will be able to reduce time-consuming and inaccurate manual data entry. Also, communication between terminals and carriers can become frictionless. In turn, carriers will enjoy accurate lifting instructions and simplified record-keeping.

Suppliers can differentiate themselves through better customer satisfaction and customer experiences while opening the potential for new operational efficiencies, productivity gains, and cost benefits.

Fuel buyers can benefit from reduced lifting times since they can immediately choose the correct carriers with the necessary training and equipment for a particular product.

Additionally, all three groups can ensure assigned drivers are trained for the product they're about to lift. With standardized data, the terminal, carriers, and drivers can be sure they're all talking about the same product allocation, preventing costly driver denials and re-routes. Ultimately, digital transformation can grant all businesses greater agility to broaden or change business models with new products to help meet ever-changing market needs.

The largest benefit of digital supply chain transformation will be the frictionless flow of information. Partners in a supply chain typically identify products using different, proprietary identification codes. A collaborative platform based on standardizing and translating those codes would allow fuel suppliers, buyers, carriers, and terminal owners to streamline the collection and distribution of data required to load fuel at the rack.

Through the digitization of the supply chain, businesses can accelerate operational processes, improve customer service, reduce manual efforts, increase data accuracy and security, and focus on creating innovative products and services.

By removing the silos and opening communications, sharing a common operations platform, and automating fast, accurate data delivery, all stakeholders can overcome barriers. This frictionless collaboration allows everyone to concentrate on growing their businesses.

About the author

As a strategic product manager for DTN, Rob Harshbarger serves as a vital link between business objectives and information technology capabilities. In his role, he efficiently and effectively translates business requirements into innovative solutions. Harshbarger is a technical team lead responsible for systems architecture and the development lifecycle, working with global IT organizations to implement back-office solutions that support the SaaS business model worldwide.

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