

Data Quality Management

Unlocking Transportation & Logistics ROI

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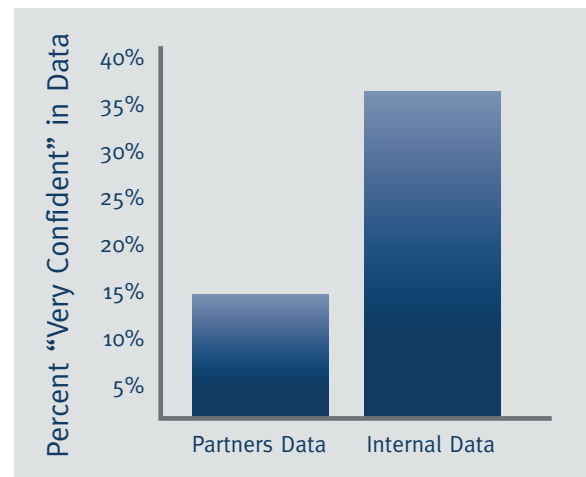
Executive Summary

Whether it's booking transportation services with a carrier, tracking shipments inbound from a supplier, or communicating delivery status to a customer, the success of a company's transportation and logistics initiatives is directly dependent upon the quality of its data. Without useable, high-quality data available at an affordable price, companies will not be able to achieve the supply chain gains they desire.

Unfortunately, many companies do not truly understand the full impact of bad data or the value of high-quality data. Although data quality is rarely mentioned as a critical success factor, it is the Achilles' heel of supply chain and logistics initiatives. The situation is significantly complicated due to the complexity of modern "virtual" supply chains. Essentially, firms are now highly dependent on trading partner systems and data that exist outside their four walls—meaning outside their control.

This dependency is put to the test because trading partners have varying degrees of technical capabilities, frequent system changes, data keying errors, and other customers they must serve. It is no wonder that today's business executives don't trust trading partner data, and many experience user adoption failures for applications dependent on this data.

- < 20 percent of companies are confident in partner data **(PWC—2001)**
- One in three companies report that "dirty data" forced them to delay or scrap a new system **(PWC—2001)**
- "Poor quality customer data costs U.S. businesses over \$600 billion annually. The real business cost is much higher." **(The Data Warehouse Institute—2002)**
- Despite a successful 'go live,' "many logistics systems are eventually shelved or fail to meet business expectations because of data quality issues." **(ARC—2002)**



Low Confidence in Data Quality Source: Global Data Management Survey 2001, PriceWaterhouseCoopers

The good news is that in the transportation and logistics arena data quality is easy to understand, is achievable, and most importantly, is recognized by many as a key element of project success. Companies with successful transportation and logistics projects are finding the approach to achieving data quality includes having a complete definition of data quality, establishing a program to guide those efforts, and ensuring strong working relationships with trading partners.

Data Quality Management: Unlocking Transportation & Logistics ROI

GXS is dedicated to helping its customers achieve an integrated supply chain. Central to this is achieving and maintaining the highest levels of data quality possible—customer's data accurately reflecting the real world, in real time.

After reading this white paper, the reader should have a solid understanding of transportation and logistics data quality, and be able to confidently ask and answer key questions including:

- What is transportation and logistics data quality?
- Why is it important?
- Why is it challenging?
- How is it solved?
- How can GXS help?
- What does it mean to your business?

CONSUMER GOODS— TMS & VISIBILITY

A large consumer goods retailer decided, after 12 months of implementation efforts, to cancel its logistics load tendering and visibility project because the data quality rate never reached above 70 percent. The software provider had difficulty ensuring quality transportation carrier data—EDI 204, 304, 214, 315, 856—the fundamental messages for tender and visibility. The vendor did not have strong messaging/network relationships with the carriers, nor did it provide a data quality management program or error correction tools. The estimated cost of the project failure was between \$USD500,000 - \$USD1,000,000 when considering actual dollars spent as well as opportunity cost. **Source: GXS**

Does Data Quality Have A Value Proposition?

As a general rule, the quality of transportation and logistics data must be over 90 percent for the data to be useful. That is, the data received from trading partners is timely, accurate, and complete over 90 percent of the time. Without this level of quality, a company risks making poor business decisions and damaging relationships with its trading partners and customers. Without the appropriate level of data quality, companies may experience:

- **User Adoption Failures**—In a short period of time, poor data quality will have TMS and logistics visibility end users rejecting the application. Not knowing any better, these users often blame the application, not the data, as the source of their problems.
- **Unnecessary Personnel Costs**—By not having clean, high-quality data, personnel must double and triple check dozens of carrier Web sites, make phone calls to forwarders, and manually build and maintain tracking spreadsheets—all of which are non-value add activities.
- **Increased Transportation Costs**—By not having insight to all orders and shipments that should be included in transportation routing, optimization, and consolidation, companies may have to pay extra money for expedited transportation services.
- **Decreased Customer Satisfaction**—By not knowing the true status of in-transit orders/shipments, inaccurate data prevents the calculation of accurate estimated time of arrival (ETA) and prevents a company from alerting its customers about delays.
- **Increased Warehouse Costs**—When inaccurate data feeds warehouse management systems, it can cause unloading delays that are especially critical in time sensitive cross-dock and vendor managed inventory (VMI) activities.
- **Increased Sourcing Costs**—Inaccurate data reduces an organization's ability to effectively select the highest performing suppliers/vendors because it lacks accurate KPIs including order-fill rates and on-time shipment percentages.

A subtler but just as critical impact of poor logistics data is that it prevents companies from truly automating their business processes. Today's economy is defined by speed: How quickly can a company respond to demand? How fast can it calculate supply chain inventory levels? How short is its cash-to-cash cycle? To become best in class in these categories, companies must simplify and automate their processes—an impossible task if they cannot trust the quality of the transportation and logistics data.

The Impact of Trading Partners

Many companies view logistics data quality as a relatively easy task because they assume data quality “exists.” This is often because they were successful with “inside-out” communication with trading partners; that is, data generated inside a company and sent outside, such as when a company creates an order and sends it to a supplier. Data quality in these scenarios is usually high because the company has total control over the system(s) that generates the data and therefore the quality of that data.

Logistics data, however, is an “outside-in” proposition. Instead of data being generated from inside the company's four walls, it is usually generated outside the four walls by a company's trading partners (e.g. carriers, forwarders, brokers). Instead of one internal system as the source of information, there are now hundreds or even thousands of trading partner systems scattered around the globe, each with a unique approach to data. Without true “door-to-door” service providers, there is a tremendous need to connect the data from disparate trading partners for each stage of a shipment because each is responsible for only a part of the transportation process.

The following summarizes the challenges posed by outside-in transportation data:

- **Numbers**—The sheer volume of trading partners makes coordinated EDI, phone calls, e-mail and faxes a time-consuming process.
- **Geography**—Trading partners located around the world require sensitivities to time zone, language, local traditions and trade compliance requirements.
- **System Capabilities**—Not all trading partner systems are created equal; they range from simple (phone and email) to complex (dedicated IT department).
- **System Intent**—Each trading partner's system is designed to support that trading partner's unique business process, so it is frequently challenging for it to meet the needs of any other company.
- **Hand-offs**—During the life of an order/shipment, information is handed off between a variety of trading partners (e.g. the factory in Malaysia, the port in California, and the trucker in Georgia).

In today's complex economy of global sourcing, distribution, and numerous trading partners/systems, companies are extremely challenged to meet the necessary 90+ percent level of data quality. As a result, companies across the supply chain are increasingly looking to better understand what data quality is and how to solve the unique challenges it presents.

HIGH TECHNOLOGY— VISIBILITY

A major high technology company set out to do a semi-annual cost/service analysis of its carriers across all lanes and factories. The goals were to identify the highest performing carriers (on-time delivery), identify areas for supply-chain redesign, and to ultimately achieve business targets of one-two percent lower inventory and five percent higher customer satisfaction rates. Because the logistics data the company collected during the course of the previous six months was not accurate and complete, they were forced to request all of the data from their service providers individually then clean and normalize the data prior to any analysis. The process took almost two man-years at a cost of greater than \$USD100,000 to complete. **Source: GXS**

Data Quality: Defined and Explained

Definition

What is a good definition of data quality? In general, it seems fairly straightforward—“data without error.” Although this definition is accurate, it is incomplete when viewed through the eyes of the TMS/logistics application end user. For example, would a logistics manager consider it high quality if his visibility system notified him five days late that a particular shipment had arrived on dock? To meet the needs of application end users, a complete definition of logistics data quality usually includes the following dimensions:

It is not unusual for 100 percent of company's trading partners to make a major data map change every Six to Twelve months.
Source: GXS

Area	Definition
Data Matching	Did all of the update messages during the life of an order or shipment actually match appropriately to the original order or shipment record? This determines if trading partners are providing the key matching data needed such as MAWB, PRO# or BOL.
Data Volume	Were all the messages expected during the life of an order or shipment actually received and processed? For example, did the trading partner transmit “booking accepted” or “arrived at destination” for a given order/shipment?
Data Completeness	This determines if trading partners are transmitting all required messages. Was data present in all the required fields within a message? For example, if the “order depart date” is a required field, is it in fact provided on all orders? This determines if trading partners are providing the full set of required and optional data within each message.
Data Accuracy	Was the data within a message accurate? For example, is the destination address for a shipment the correct address? This determines if trading partners are providing accurate data for each data field within a message.
Data Timeliness	Was the message transmitted by the trading partner in a timely fashion? For example, what is the delay between an event occurring, such as “customs cleared,” and the transmission of the message from the trading partner? This determines if trading partners are providing the data quickly enough.

What Can Go Wrong

What can go wrong with data? Why is it that errors all too often are able to make their way undetected or uncorrected into the target TMS/logistics visibility applications? Essentially, almost all data errors occur at the source—trading partner systems and/or a company's WMS/OMS. Once the errors occur, they easily pass through to TMS and logistics visibility end users because these applications usually do not have error detection capabilities.

Source Systems: The Origin of Most Problems

The causes and variety of transportation data errors are as numerous as the number of trading partners a company has. However, the majority of source system problems can usually be traced to one of three reasons: manual keying errors, system changes, and missing data:

- **Manual Keying Errors**—Manual data entry is especially susceptible to error. Surprisingly, a large portion of transportation and logistics data is still entered manually—not only by “mom and pop” trucking outfits but also by worldwide suppliers/vendors. Most larger providers rely on information from these “mom and pop” trading partners and are not prepared to handle the scope and volume of “fat-finger” data errors that come from their less tech savvy trading partners.
- **Continual Modifications to Source Systems**—When trading partner systems are upgraded or modified, it results in messages with new formats and new data that do not resemble previously established and expected standards for communication. The result is a company’s TMS or logistics visibility system must be upgraded to reflect those changes.
- **Missing Data**—The lack of accurate shipment tracking numbers is often a problem for any company with an outbound TMS or logistics visibility project. This problem occurs because the company itself is the source of Advance Ship Notice (ASN) via its WMS or ERP system, but its business and data processes do not usually include the accurate capture of carrier tracking numbers. As a result, the ASN is “orphaned” in the logistics visibility system because carrier status updates can never match to it.

TMS and visibility applications must be the first line of defense that verifies incoming data before it gets to end users. Unfortunately, many of today’s TMS and visibility solutions are passive in this regard, since they lack data validation, data monitoring and data standardization capabilities.

Target Systems Lack Verification

As described above, data errors usually occur at the source—the trading partner, WMS or OMS. Because of this situation, TMS and visibility applications must be the first line of defense that verifies incoming data before it gets to end users. Unfortunately, many of today’s TMS and visibility solutions are passive in this regard, since they lack data validation, data monitoring and data standardization capabilities.

- **Data Validation Rules and Tools**—Data validation rules and tools are a minimum requirement for logistics data quality. These ensure that the data received is checked for completeness, accuracy and matching prior to acceptance, and that any errors can be corrected. Most logistics visibility vendors and do-it-yourself companies are often unable to develop a comprehensive set of rules and tools due to the development cost and/or lack of domain expertise. In addition, unique business scenarios are often not documented or evaluated and thus not included for consideration.
- **Monitoring Data Transmissions**—Companies usually lack the internal resources to ensure that each trading partner is sending all the needed messages for each order/shipment. As a result, companies communicate messaging standards to their trading partners, but they are then not able to manage the process of ensuring that the trading partners are sending all of the expected information in a timely manner.
- **Correlating Data Across Trading Partners’ Systems**—Larger trading partners typically have sophisticated internal IT systems to support their business processes. Although flexible, these systems are challenged to account for every unique data requirement of every company. For example, each trading partner often uses a standard set of data codes to represent locations, countries, and even other trading partners. These codes are not always the same ones used by other trading partners.

The GXS Solution: Data Quality Management

GXS believes that without timely, accurate and complete data from transportation carriers, brokers, forwarders, suppliers and other trading partners, a company cannot begin to appreciate the benefits of their supply chain technology investment. While it is relatively easy to validate that the EDI information sent from trading partners is syntactically correct (provided in the appropriate format), most companies are not equipped to determine the completeness, accuracy or timeliness of trading partner data. Based on experience, GXS has found:

- Traditional means of connecting to transportation carriers renders only 50 percent data quality;
- GXS data quality management technology improves quality to over 80 percent by quickly identifying business issues in a messages submitted by a trading partner; and
- GXS data management services staff improves quality to over 90 percent by actively monitoring data quality performance and pro-actively identifying and resolving data quality issues.

To address the challenges our customers have faced with data quality, GXS delivers the highest levels of data quality through the GXS Logistics Network, a logistics-specific service in the groundbreaking GXS Trading Grid[®], using a combination of technology and services.

Technology

The GXS data quality technology offering includes three key components:

1. **Data Quality Business Rules**—To ensure that trading partner data processed into the GXS Logistics Network is of the appropriate data quality, GXS leverages 800+ customer-configurable business rules and a data “validation engine” to ensure data integrity. These logistics-specific rules examine a variety of data factors including those shown in the table on page 9.
2. **Data Standardization**—As mentioned previously, it is unrealistic to expect trading partners to alter their systems to meet a company’s unique data needs. To solve this problem, GXS provides data standardization functionality that enables a company and its trading partners to send a wide variety of codes and have them all referenced within the GXS solution to the company’s preferred standard. In addition to standardizing data as it is received, the GXS data standardization functionality allows for both the original inbound code as well as the standardized code to be available for both reporting and data extracts.

Validation Type	Definition
Code Validation	Is the code received for the specific data field a valid code? Is it one of the codes that your company has agreed can be used to populate the field? For example, a shipment update message may contain a code of 1234 provided for a carrier field. Is the code provided from the company's approved list of codes?
Required Fields	Is data provided for each and every required field? Typically, if required fields are not present, the messages does not contain enough information to establish message uniqueness and value. For an ASN message, a company may require a vendor code be provided.
Time & Time Zone	GXS rules validate that if a date and time are provided, that a relevant time zone code is provided. Many shipment update messages will contain a date and a time for a specific activity, but not an accurate time zone code. As a result, the date and time information are not valid for decision-making.
Currency	GXS business rules validate that if a value is provided for a currency value field that a relevant currency code is provided. For example, order messages can contain the item costs associated to the order; however, if a valid currency code is not provided, the end user does not know if the costs are in \$USD or the currency of the originating country.
Dependency	GXS business rules validate that if a certain type of message is being processed that it contains valid information relating it to other records within the database. For example, many ASN records will contain order and item information. Dependency rules are used to validate that the order and item provided on the ASN are valid.
Update	If a message received is intended to update an order or shipment, does the order or shipment already exist within the database? The update rules are used to ensure that messages that are received are processed against valid existing records.

3. **Data Error Resolution Tool**—The GXS data error resolution tool is an online tool for the management of transportation and logistics data quality issues detected by the GXS data quality business rules. The tool is used to quickly and easily resolve errors for a specific message transaction or all messages with the same error. The tool provides users with the ability to:

- View all errors for a specific message transaction
- View all error messages by rule violation
- Aid in troubleshooting of data quality issues
- Execute mass correction of messages with the same inaccurate information provided
- Execute mass deletion of messages with inaccurate data
- Perform error reporting on the details of error issues.

Data Management Services

GXS Data Management Services™ (DMS) provides companies with the extra level of data quality through the personal touch of dedicated analysts that continuously monitor, resolve and improve the quality of logistics information available for decision-making. With DMS,

DMS provides companies with the extra level of data quality through the personal touch of dedicated analysts that continuously monitor, resolve and improve the quality of logistics information available for decision-making. With DMS, companies completely outsource their data quality management to GXS.

companies completely outsource their data quality management to GXS. DMS is customized for each GXS customer, and includes a customer-specific data quality program, data quality metrics, trading partner relationship management, error identification and resolution, and much more. DMS allows GXS customers to focus on leveraging the information from their transportation and logistics applications rather than worrying about the quality of that information. In particular, DMS increases the level of data quality through:

- Resolution of trading partner business process issues regardless of partner's messaging capabilities;
- An experienced team of data quality professionals with deep transportation and logistics expertise;
- Daily monitoring of data exceptions and the development of customized data quality KPI reports; and
- Ongoing performance management, measurement and data quality improvement with trading partners and transportation service providers.

The GXS Logistics Network utilizes a combination of technology and personal services to address the challenges our customers have faced with data quality management. With this combination, GXS delivers high-quality, value-add logistics information at an affordable cost (usually lower than a traditional VAN) with short time to benefit. The GXS Logistics Network enables companies to increase the value of their enterprise applications, improve productivity, speed time to benefit, and lower the cost and risk of ownership.

Customer Success Stories

Home Improvements Retailer: Reducing Pipeline Inventory, Increasing Customer Satisfaction

Overview

As with most large retailers, the retailer's international supply chain suffered from inconsistent, delayed and inaccurate order and shipment information from its trading partners. To achieve complete inbound supply chain visibility, the retailer turned to GXS to establish connections for ASN information with over 400 international suppliers and transportation service providers. During the implementation of the GXS Logistics Network, GXS's Data Management Services (DMS) group identified two main data issues:

- **Vendor**—Data keying errors on ASNs
- **Carrier**—Frequent data mapping changes

Data Keying Errors on ASNs

GXS connected each of the retailer's international vendors to the GXS Web-based ASN application. Initially, many of the vendors were "fat-fingering" key information with too many characters or with the additions of unnecessary spaces, dashes or commas. This issue was especially true for Shipment Tracking Numbers in the ASNs. To resolve this issue, GXS implemented the "Key Field Assembler" (KFA) solution for the GXS Web-based ASN application. KFA requires users to key data into a predefined format (e.g. specific

number of characters, alpha or numeric, with or without spaces). The result of the GXS Web-based ASN and KFA solutions was the retailer immediately realized structured connectivity and an overall data accuracy rate of over 90 percent.

Carrier Mapping Changes

Due to carriers' efforts to continually improve their processes and systems, 100 percent of the retailer's carriers made a major map change during the first six months after the completion of the implementation of the GXS solution. Because the GXS DMS team has direct relationships with the transportation carriers, the changes were identified and managed by GXS before they had an impact on the retailer's logistics visibility system.

The Results

Prior to the retailer using the GXS Logistics Network and DMS, it was operating without automated connectivity to its vendors and an overall data quality rate below 50 percent. The retailer's traffic managers and inventory specialists were not able to trust the information for business decision-making. Within three months of the project, the retailer had structured connectivity to its international vendors and had improved its data quality to well above 90 percent. Consequently, the retailer's end users were able to use the GXS Active Logistics solution to make informed decisions—including when not to expedite a shipment—to realize the full benefit of the investment.

Within six months of the project, a major home improvement retailer had structured connectivity to its international vendors and had improved its data quality to well above 90 percent.

Consumer Electronics Company: Improving Order Fill-Rates and Customer Service Levels

Overview

Before selecting the GXS solution, the consumer electronics company recognized the need for automating and externalizing certain logistics processes. The company also recognized the need for a central, common source for logistics information accessible enterprise-wide and available for existing enterprise systems.

GXS implemented its GXS Logistics Network and Active Logistics solutions to provide the company with a centralized source of accurate supply chain information. Within a short time period, GXS established over 20 connections to top international and domestic trading partners including ocean carriers, drayage providers and customs brokers. Additionally, the company elected to use GXS DMS to manage their trading partners' data quality performance. The GXS DMS identified two key focus areas for data quality improvement:

- Trading partner system changes
- Employee turnover in key trading partner positions

Trading Partner System Changes

Within six months of the implementation being completed, 100 percent of the company's trading partners made a major system change that impacted the quality of data that was being provided. Several carriers made changes to their activity codes and were providing the company with non-valid activity codes. This caused the company to lose visibility to certain key activities during their shipment process and have false expectations of when

A global consumer electronics company's overall data quality performance rose from 70 percent to over 90 percent less than four months after the Logistics Network and Visibility implementation project was completed.

shipments would arrive. To resolve this, the DMS team instituted weekly conference calls with the trading partners as well as established action plans that detailed processes steps to resolve issues.

Employee Turnover in Key Trading Partner Positions

GXS DMS found that trading partner employee turnover was causing data quality problems, especially at the less tech savvy trading partners. The new employees were then unfamiliar with the company's data quality requirements. GXS solved the problem by re-distributing educational material and holding training sessions on the company's data requirements. In addition, GXS used established weekly carrier status calls and data performance reports to ensure issue resolution

The Result

Through the efforts of GXS DMS, the consumer electronics company's overall data quality performance rose from 70 percent to over 90 percent less than four months after the GXS Logistics Network and Visibility implementation project was completed. In addition, some of the company's most strategic carriers made significant improvements in their data quality. As a result of the GXS DMS activities, the company's end users are now able to use the information within the GXS Active Logistics solution to make informed decisions and realize the full benefits of its investment in GXS.

Where to Start: A Checklist for Success

As the GXS customer success stories point out, it is entirely possible for a company to achieve high-quality transportation and logistics data. There are many reasons for success; however, through experiences gained by working with international Fortune 500 companies, GXS has identified ten critical success factors (CSFs) that are common to all the success stories:

Make Data Quality a Priority—An important point for a company's employees (in particular its executives) and its trading partners is to prioritize the value of clean data. Companies should understand that visibility project ROI is dependent on good data because end users will reject a system with bad information. Trading partners should understand there is a cost to them too—that not adhering to data quality standards may result in the company assessing it with fines, withholding payment, or taking its business elsewhere.

Fix Issues at the Source—True quality comes from the improvement of the process to eliminate defects, rather than from finished product inspection. The rule of thumb in manufacturing is that it costs ten times more to address quality after production of a product rather than at the source. The same rule applies to logistics and transportation data quality—the focus of data quality should be on standards and prevention at the source of the data. This often means that trading partner processes and systems must be changed.

Establish a Data Quality Program—Every logistics visibility project should have a data

quality program that outlines: 1) data quality metrics, 2) processes and tools for measuring targets, 3) key owners responsible for ensuring data quality, 4) service level targets (e.g. overall data quality score >90 percent) and 5) a timeline for achieving targets. Projects that do not have this program never gain the focus required to achieve the necessary level of data quality.

Establish Data Quality Definitions—Each company should have a clear and comprehensive definition of data quality to serve as the guide for data quality planning and execution, as well as being the shared terminology for all project participants including internal employees and trading partners. The definition should include the key dimensions of data matching, completeness, accuracy, volume and timeliness.

Establish Metrics and KPIs—The business axiom “what gets measured gets managed” is certainly true for data quality. Using the data quality definitions, a company can establish service levels; for example, all messages received must have data in 100 percent of the required fields. These metrics enable tracking of the data quality history, achievements and trends; it also serves as a shared accountability record for the company and each of its trading partners.

Monitor Progress—Constant monitoring of data quality metrics and KPIs enables fast detection and response to data trouble spots. For example, the data completeness for a particular carrier suddenly drops because the carrier stopped submitting a data element such as Cargo Destination. In addition to correcting trouble spots as they occur, always knowing the data quality status and progression toward a target level is fundamental to planning the rollout of the TMS/visibility application to end users.

Manage Relationships with Trading Partners—A company’s “data” relationship with its trading partners is critical to identifying data quality issues before they occur, and quickly addressing any errors that do occur. This data relationship is based on experience, trust and shared data requirements between the company and its trading partners.

Logistics-specific Data Quality Rules and Tools—Critical to ensuring fast detection and correction of any data error is a comprehensive logistics-specific set of rules and tools that is configurable based on the data and business processes of the customer. These tools must be easy to use, able to identify simple to complex errors, and provide information in the customer’s unique business terminology.

Start Small, Grow with Success—Most visibility projects that achieve high levels of data quality begin with project and data requirements that are manageable in scope. The quote “don’t boil the ocean” truly does apply to data quality. Starting small, by focusing on the data quality of all shipments between two countries for example, enables a company to gain experience and momentum in its data quality efforts.

Commit to Continuous Improvement—Undoubtedly, during the life of a transportation/lo-

CRITICAL SUCCESS FACTORS FOR LOGISTICS DATA QUALITY

1. Make data quality a priority
2. Fix issues at the source
3. Establish a data quality program
4. Establish data quality definitions
5. Establish metrics/KPIs
6. Monitor progress
7. Manage relationships with trading partners
8. Utilize business rules and tools
9. Start small, grow with success
10. Commit to continuous improvement

gistics project, a company and its trading partners will experience times of difficulty where it seems as though a target level of data quality simply cannot be achieved. But it is the relentless pursuit of data quality that enables a company to achieve 60 percent data quality, then 70, 80 and eventually 90 percent+.

Conclusion

Having truly emerged into the mainstream in the 1990's, transportation management and logistics visibility systems quickly established a potential to improve the supply chain existing beyond the four walls of the enterprise. While there have been clear successes—especially for transportation planning—a great many projects dependent upon data from trading partners have been plagued by data quality problems.

The data quality problems are often due to the complexity of a company's supply chain, in particular the large number of disparate trading partners and systems. Reinforcing this point, business executives continue to have low confidence in the quality of trading partner data. That said, many executives are not aware just how difficult it is to solve the problems. As with many situations, the devil is in the details.

The good news is that some companies are achieving success in the area of transportation and logistics data quality. Those companies are experiencing benefits including:

- **TMS/Logistics Application ROI**—Good supply chain decisions come from good data
- **Reduced Risk**—Projects fail due to poor supply chain data quality
- **Extend the Value of Systems**—Enable ERP, CRM, etc. with high-quality supply chain data
- **Grow Your Relationships**—Trading partners succeed when you succeed.

It is not surprising that the successful companies have common characteristics such as an appreciation for the value of good data, the cost impact of bad data, and the need for a relentless pursuit of data quality across the supply chain trading partners.

GXS has committed itself to this relentless pursuit. We are committed to helping our customers achieve an integrated supply chain and utilizing data quality management is a key tool in this effort. GXS provides market-leading data quality technology and outsourcing services that enable our customers to focus on running their business rather than managing the day-to-day status of their data. In addition, while many supply chain software application companies exist today, GXS has taken an application “agnostic” approach. That is, GXS will provide trading partner connectivity and data quality to any software application.

If you have not already, the time is now to start your TMS or logistics visibility data quality program. GXS encourages you to start with a manageable project to achieve success and then grow it quickly as your skills and momentum increase.

About GXS

GXS is a leading B2B integration services provider and operates the world's largest integration cloud, GXS Trading Grid®. Our software and services help more than 550,000 businesses, including 22 of the top 25 supply chains, extend their partner networks, automate receiving processes, manage electronic payments, and improve supply chain visibility. GXS Managed Services, our unique approach to improving B2B integration operations, combines GXS Trading Grid® with our process orchestration services and global team to manage a company's multi-enterprise processes.

Based in Gaithersburg, Maryland, GXS has direct operations in 20 countries, employing more than 2,800 professionals. To learn more, see <http://www.gxs.com>, read our blog at <http://www.gxsblogs.com> and follow us on Twitter at <http://twitter.com/gxs>. You can also access our public filings with the Securities and Exchange Commission at <http://www.sec.gov/edgar.shtml>.

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About GXS

GXS is a leading B2B integration services provider and operates the world's largest integration cloud, GXS Trading Grid®. Our software and services help more than 550,000 businesses, including 22 of the top 25 supply chains, extend their partner networks, automate receiving processes, manage electronic payments, and improve supply chain visibility. GXS Managed Services, our unique approach to improving B2B integration operations, combines GXS Trading Grid® with our process orchestration services and global team to manage a company's multi-enterprise processes. Based in Gaithersburg, Maryland, GXS has direct operations in 20 countries, employing more than 2,800 professionals. To learn more, see <http://www.gxs.com>, read our blog at <http://www.gxsblogs.com> and follow us on Twitter at <http://twitter.com/gxs>. You can also access our public filings with the Securities and Exchange Commission at <http://www.sec.gov/edgar.shtml>.