

Digital Supply Chain Institute

DATA TRADING: A NEW APPROACH TO MAXIMIZING THE VALUE OF YOUR DATA

What It Is, Why It Is Different
And How To Do It



DSCI
DIGITAL SUPPLY CHAIN INSTITUTE



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“If you think about it, following a big data approach is what powered our knowledge of the sun, moon, stars, and Earth for years. Still, it was only when Galileo peered through a telescope that we could start to understand more deeply how these celestial bodies moved in relation to one another.”

An Interview With Clayton M. Christensen, MIT Sloan Management Review



About Digital Supply Chain Institute

The Center for Global Enterprise’s (CGE) Digital Supply Chain Institute (DSCI) is a leading-edge research institute focused on the evolution of enterprise supply chains in the digital economy, and the creation and application of supply chain management best practices.

How DSCI Can Help

DSCI is a membership-based, not-for-profit institute whose members are focused on executing the supply chain of the future. We perform research, conduct pilots, communicate the Digital Supply Chain story, and link members with companies that are going through similar journeys. Visit our website dscinstitute.org to learn more or reach out to Vivek Ghelani, Project Manager, DSCI at vghelani@thecge.net.



THE CENTER FOR
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About the Center for Global Enterprise

CGE is a New York-based nonprofit, nonpartisan research institution devoted to the study of global management best practices, the contemporary corporation, economic integration, and their impact on society.

PREFACE

This Guide and Simulator are important tools to help you recognize that new data is needed to better understand and shape demand and manage your supply chain in a way that makes customers happy. We call the tool “Data-Trading.” It is a way to obtain specific, needed data from suppliers, distributors, customers, and even other departments within your company! As we see from the struggle to react to the novel coronavirus (COVID-19), managing supply chain efficiency and continuity is hugely complex in an environment with global supply problems, restrictions, and wildly fluctuating demand. Now, more than ever, is the time to upgrade your data model and find the specific data that will make your supply chain more visible and flexible. In the past, many companies talked about knowledge-sharing and collaboration but too often it ended with talk and no action. Data-sharing was focused on the transaction, not on overcoming shared challenges or improving collective business performance. Now, you have it with Data-Trading. Companies and internal departments will collaborate with a purpose: trading specific data to achieve clear objectives that are a win for all. We have seen it work to create excellent business results.

We look forward to your stories and comments as we charge ahead!

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CHAPTER 1:

Introduction to Data Trading

You have data that's high value to your customers and suppliers.

Your customers and suppliers have data that can power your algorithms to accelerate your business growth.

Make a trade.

Companies are drowning in data. Yet, one of the major hurdles companies face in transforming to a Digital Supply Chain is their ability to get precise data from customers and suppliers — and to fully realize the value of the data they have. Many supply chain executives also cite difficulty in obtaining timely, accurate data from other departments in their companies. To succeed in your transformation, you must find a way to overcome these hurdles.

As a supply chain leader, you have an inventory of data just as you have an inventory of products or parts. Optimizing the value of your data is part of your job in the new Digital Supply Chain — and one of the keys to your success and the growth of your company.

Sophistication in the acquisition and utilization of new data is a competitive advantage. The gap between those that are good and those that are not will quickly widen as the strategic use of algorithms, Artificial Intelligence (AI) and Machine Learning (ML) grows and as companies evolve to more data-driven decision-making.

Today's supply chains need to transform to meet the needs of the "New Customer" and having the right data is the only way to do it. (DSCI recently published a [paper](#) defining the New Customer's expectations). This goes beyond technology-driven digital transformation. Technology has created

new expectations for the “New Customer.” It doesn’t matter if you are selling to a consumer or a business; to truly understand the needs of the New Customer, you will need data you do not currently have. Later in this paper, we will present the idea of a new data model. Others hold much of this data for the new model, but don’t make the mistake of thinking it’s all about collecting the most data. Big data is here to stay, but sometimes thinking small is the better approach. It is about finding the right data to address specific problems.

Based on our research, collectively agreeing on what data your company wants is not easy. It’s also not easy to value the data you already have and identify who would want it. For these reasons, we developed the DSCI Data Trading Framework and companion Simulator, which provides a step-by-step approach to getting what you need and getting value for what you have.

In the digital economy, a lot of people say data is a new currency. That’s nothing new. However, unlike currencies, the value of data is relative. It is not a transparent market. What is new is the idea of developing and implementing a data trading strategy to accelerate your Digital Supply Chain transformation.

Leading other departments and value chain partners in understanding how to value and trade data will help accelerate your transformation and sustain your competitive advantage. But because the value of data is relative, what is low value to you could be the missing piece of the puzzle to another company.

The raw data itself may have limited value, but cleaned and added to other elements or an existing algorithm, it may become extraordinarily valuable. This works for both sides of a trade. For data trading partnerships to be sustainable, they will need to be mutually beneficial.

We introduced the DSCI Data Trading Framework in the spring of 2019 in our paper, [Data Trading as a Catalyst for Digital Supply Chain Transformation](#). Here, we take it to the next step by providing specific tools and techniques for getting started, including a Simulator you can use to test scenarios or use as a checklist for trading.

The root cause of the lack of data trading is the vagueness of what data sharing means to each company. Let’s be realistic: no company is going to give you all of their data. And you probably don’t

“Technology has enabled companies to rush towards Big Data, and I understand the excitement. But sometimes, smart leaders need to get away from the herd. They need to encourage their people to think about data at a granular level. Exactly what data do we need to improve performance? Exactly what data do we have that would be valuable to others?”

Sam Palmisano,
Chairman, Center for Global Enterprise

“Most companies still don’t realize the value of their data. It’s kept in silos. Companies need to breakdown the silos and realize their data is an asset they can monetize and barter.”

Deana Denton,
Director of IT, GSM, Corning



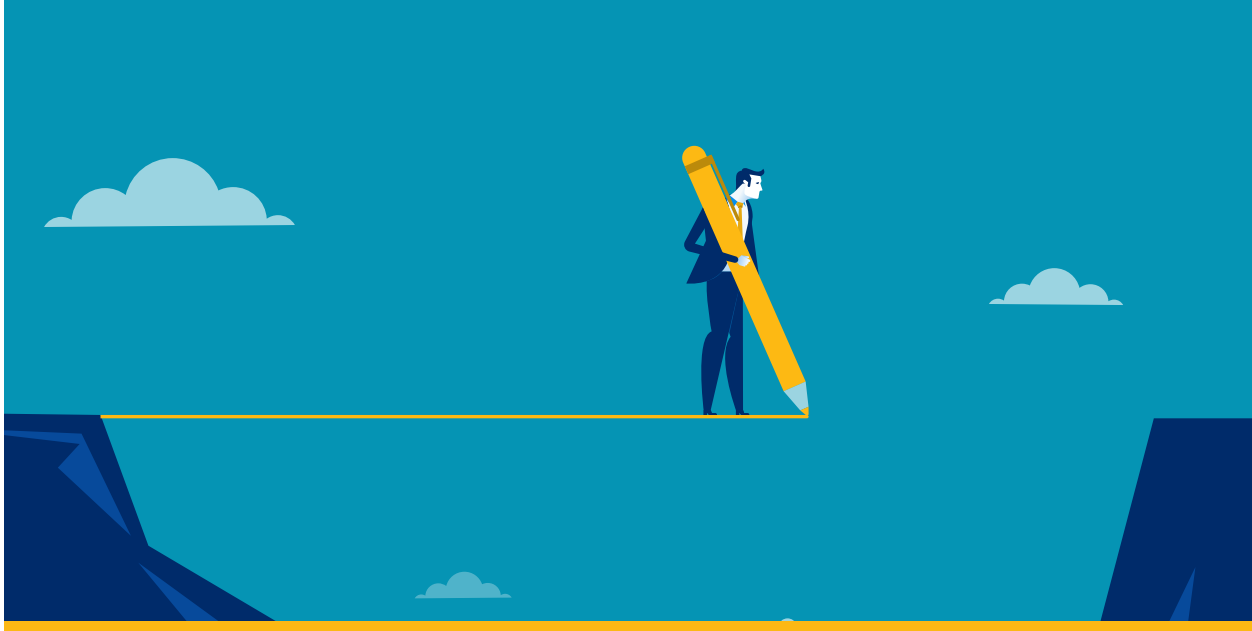
Only 28% of the respondents out of 344 supply chain executives think about data sharing beyond the transaction in a recent DSCI survey.

need it all. Of course, you need to identify the truly proprietary data — the crown jewels — that give you a competitive advantage and protect them. But you probably have a lot of data that could be valuable to other departments or companies.

What is needed is a laser-focus on what you need and what you have that would be valuable to someone else. Your company can gain a competitive advantage by uniquely using their data.

STORIES FROM THE FIELD

A chemical company was seeking the sensor-based data a customer used to track inventory levels of the liquified chemicals it sold and delivered to the customer's manufacturing site; they knew they could provide a more seamless inventory replenishment for the customer with that data. The customer balked at the idea of sharing what they considered to be confidential inventory data. So, the chemical company went back to the customer and proposed a data trade — the chemical company's proprietary price forecasts in exchange for the customer's inventory levels. Both parties agreed to trade the data under a restricted-use agreement.



CHAPTER 2

Data Dilemma: Why this New Approach is Needed

One thing is for sure, most companies do not have an inventory list of their data, and no one is managing their data as a strategic asset. They are unaware of their data's value to others. Based on our survey and ongoing interviews with supply chain executives, most companies are frustrated by the lack of data sharing with their customers and suppliers — and with other departments in their own company. Of course, companies share some data with their suppliers and customers, but it is usually focused on the transaction — not on improving business performance.

Companies are grappling with the onslaught of new data and how to best utilize fields like decision-science. They are seduced by the beautiful stories vendors tell about shimmering data lakes. They are transfixed on bright shiny new technologies that promise to make everything fast, flexible, and secure. But the reality on the ground is different.

As we interviewed companies from many industries and countries, it became clear that there is a big gap between the promise and the reality. One of the major reasons for the gap is that there is a New Customer with new expectations. It doesn't matter if you are B2C or B2B. To make the New Customer truly happy, you need specific data that lets you know and be present with them.

“Finding an edge in private markets is often about exploiting information asymmetries. The lack of data underlying the models of decision-making is a key challenge. At the same time, an opportunity lies in the enormous amount of information available in alternative data sources such as news, customer reviews, and social media posts on the web, as well as from sensor data analytics.”

EFront, Sept. 26, 2019

Yet, too often, companies do not have all the data they need to understand and serve the New Customer. Sure, a company can buy data from data aggregators and research firms – but so can its competitors.

THE SITUATION TODAY



of companies are looking for ways to accelerate their Digital Supply Chain transformation.



of the respondents have projects underway to identify and evaluate the potential use of new data to directly improve business performance.



of companies have a program in place that routinely assigns a ranking or value to the impact specific new data would have on their business performance.



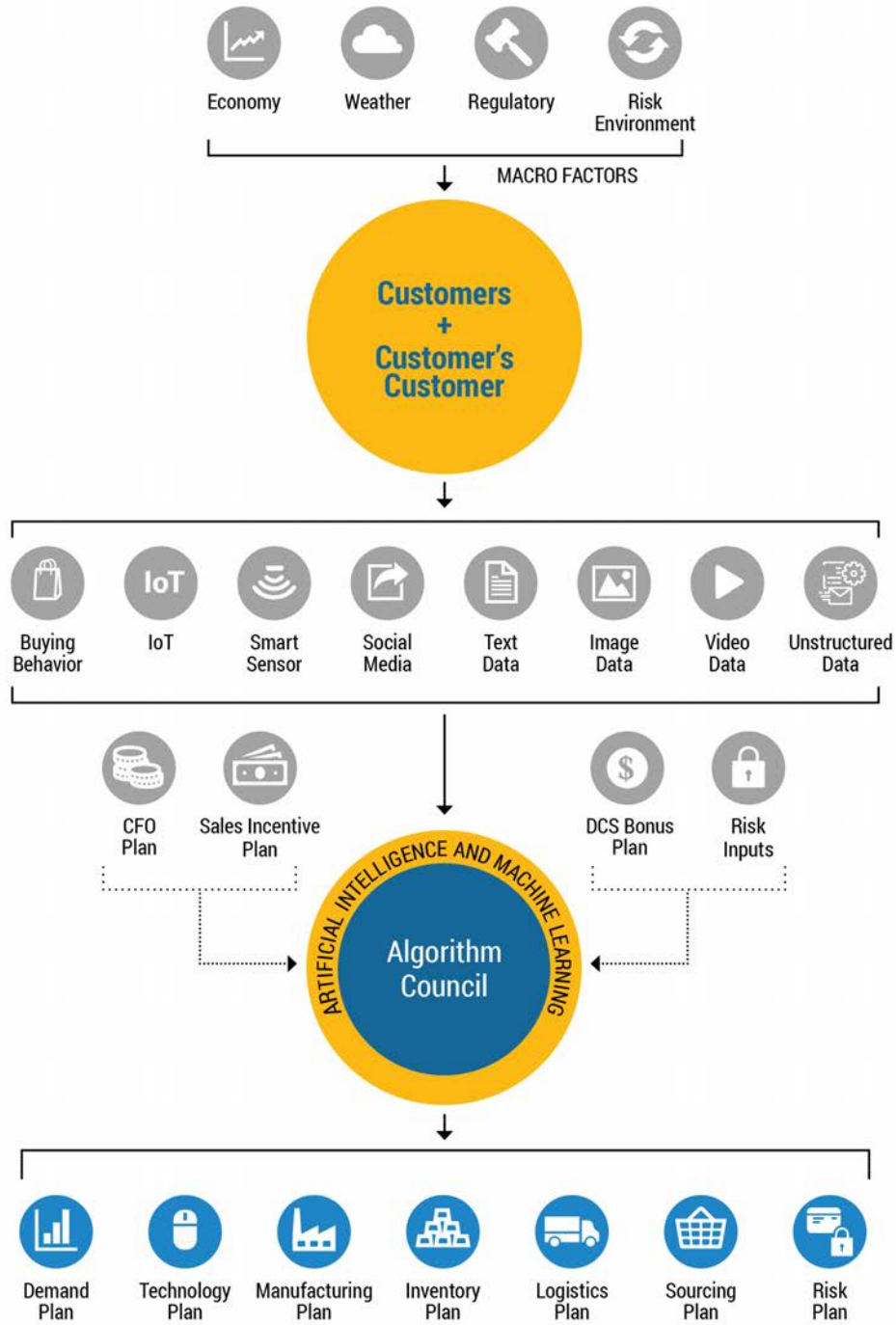
strongly agree/agree that having a framework for sharing data with customers and suppliers that identifies and values exactly what data is needed and what could be traded would be useful.

Source: DSCI survey results 2019 of 280+ supply chain executives

Another thing we discovered in our interviews was that companies are trying to do wonderful new things with data using AI/ML, but with an old supply chain data model. So, DSCI developed a new, customer-centric Digital Supply Chain data model in our 2018 paper, [*Driving Demand in the Digital Supply Chain: Algorithms and the Untapped Power of Applying Real-Time Big Data and AI/LM*](#). Look at the new data model, and the need for effective data trading will jump out at you — you will see the critical importance of obtaining and integrating the right data from new sources.

DIGITAL SUPPLY CHAIN

Customer and Algorithm Council Driven Data Model



THE PROMISE VERSUS THE REALITY

The availability of huge amounts of data is forcing companies to change how they plan and operate. However, for many companies the change is slow and difficult. There is a gap between the promised future and today's reality. This is the data dilemma.

Data Dilemma

THE PROMISE

- Data-driven decision-making
- Improved demand forecasting
- Predictive analytics to drive demand and reduce risk
- Strategic use of algorithms
- AI/ML leading to continual improvement
- Seamless data sharing
- Being present with your New Customer

THE REALITY

- Too much data
- Too much time spent cleaning and sorting data
- Unused data
- Data in internal silos
- Slow process to get data from other departments
- Legacy systems that don't communicate
- Data governance and protection challenges
- Missing key pieces of data
- Data exchanged with customers and suppliers is usually limited to the direct transaction



CHAPTER 3:

Data Trading: Making It Happen

One of the significant challenges companies face in transforming to a Digital Supply Chain is the ability to share data internally and gain specific, critical data from customers and suppliers. Everybody talks about “Big Data,” but sometimes the secret to success is to get the right “Small Data.”

Companies need to break down internal departmental silos and collaborate with customers and suppliers. The DSCI Data Trading Framework can be a catalyst to help you prepare, negotiate, and govern data trades.

Based on interviews with companies around the world in multiple industries, we discovered there are three distinct approaches to data trading. The first two approaches apply to any company in any industry. The third is appropriate for companies that have a specific role in the supply chain.

Three Approaches to Data Trading

1. Internal 1:1 Data Trading
 2. External 1:1 Data Trading
 3. External Value-added Data / Service Bundle (Many-to-Many Through One)
-

In all cases, the key to the DSCI Data Trading Framework is to have a laser-focus on specific pieces of data. Don't think in broad terms about large data exchanges. It will take too long to negotiate, require too many approvals and be too difficult to govern. Think laser-focus. Be realistic and start small while you gain experience – at least in the beginning.

The lack of effective collaboration between departments and with customers and suppliers is a fundamental hurdle. But too often, even when companies do “collaborate,” it means more committees and working groups, more talk, and more planning. But what companies need is more action and what we call “collaboration with a purpose.” We do not think meaningful collaboration will happen unless it is in the economic self-interest of the people involved. Fellow employees, suppliers, distribution partners, customers are all too busy to give you what you want unless it helps them. Establishing short-term data trading projects with measurable goals can help you go over, under, and around the hurdles. It will create incentives for both parties.

Internal 1:1 Data Trading: Breaking Down the Silos

Internally, data trading between departments can be the “purpose” behind “collaboration with a purpose.” It is a one-to-one trade between two departments — each that can benefit from data the other has.

We were somewhat surprised by how quickly companies saw the application of data trading to solve internal problems. We heard many examples of the difficulty one department has in getting data from another department. Yet the cross-departmental use of algorithms is a key component to effectively implementing an effective Digital Supply Chain strategy.

STORIES FROM THE FIELD

One supply chain executive for a major retail chain told us they were stuck in a data gap between the physical stores and the e-com department. Both departments had data that would help each other track customers and improve the supply chain’s demand management. Yet, no one was incentivized to share the data. Any discussions on the topic ended up talking about broad data exchanges that required system integration, significant IT investment, and a lot of time. They were always bogged down on time and cost. Finally, the supply chain executive decided to start small. Retail and e-com agreed to trade customer data on one SKU to see how it went. They started the old-fashioned way and exchanged the data on spreadsheets.

To initiate internal data trading, it is critical to find a common problem — something that will pull the departments together around meeting a common goal. It’s great if it is a goal that will help each department improve its performance against an existing performance indicator. Ideally, it can lead to the two departments having a new joint performance indicator.

Data Trading Examples: Internal

Retail Supply Chain Executive Problem to Solve:

Where to hold the inventory for a popular SKU to serve their retail locations

Needed data from stores:

Actual consumption by SKU by the store each week

Data to trade:

Total inventory in the pipeline by SKU

Supply Chain Executives of Consumer-Product Manufacturers Problem to Solve:

Improve raw material sourcing efficiency for one product

Needed data from sales:

Multi-channel sales data for the product

Data to trade:

Total inventory in DC and in transit for promotional planning

Sourcing Executive - Problem to Solve:

One product group is trying to respond to production disruption from an unexpected event

Data to trade:

Available production capacity over next 60 days

Needed data:

Order-volume of similar product from a related product group

External 1:1 Data Trading: Accelerating the Digital Supply Chain Transformatio

Companies are seeking more data from customers and suppliers, yet they are struggling to do so. One of the reasons is that they are not specific about what data they are seeking - and what data they are willing to give in exchange. The DSCI Data Trading Framework is a unique way to address this. It allows you to assess the value of what you have and to provide a value to the specific data you want.

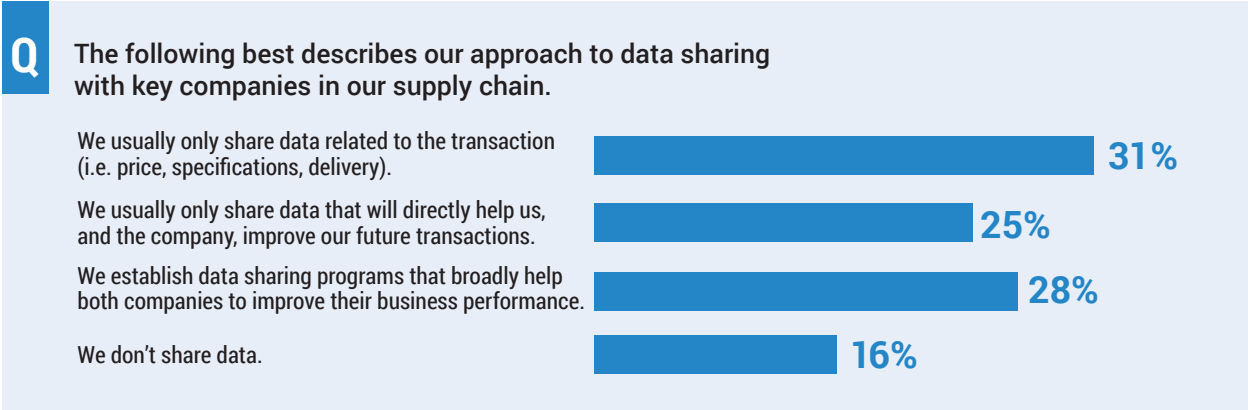
As we said earlier, the Digital Supply Chain is a customer-centric model that captures and maximizes the utilization of real-time data coming from a variety of sources. One of the critical elements of doing [The Frontside Flip](#) is access to and usage of new data. However, there is tension between having a lot of data and having the right data. There is a reluctance to spend the time to clean and sort data to make it usable to others, as there is the reflexive reaction that data trading is complicated and that it will require sophisticated technology and application programming interfaces (API).

On the one hand, companies say they can't process and effectively use all the data they have now. But on the other hand, they are eagerly clamoring for more data to make critical business decisions. More data from customers. More data from the customer's customers. More data from suppliers. More data from the supplier's suppliers. While data is ubiquitous, the necessary data for improved decision making and bottom-line results is too often out of reach.

We hear how critical it is to get the "right" new data in interview after interview, yet it's not happening. One of the major hurdles to accelerating Digital Supply Chain transformation is collaboration and information sharing with companies in the end-to-end value chain.

"Information is inherently valuable and data is the currency in which information is traded. The DSCI framework of data trading brings needed focus to a process that already happens to some extent within and across organizations. The biggest opportunity around data trading is to formalize the process and take advantage of valuable data assets."

Brian Simons,
CEO, Janus Logistics Technologies



Source: DSCI 2019 Survey of 344 supply chain executives

Companies are aggressively utilizing AI/ML to gain a competitive advantage. One of the most important aspects of the Digital Supply Chain is collaboration beyond the boundaries of your organization. We hear it from the executives we talk to: the need for better cooperation with customers and suppliers; the need for shared performance metrics with customers and suppliers; the need for data sharing with customers and suppliers. But data sharing with customers and suppliers is easier said than done.



Only 28% of the respondents think about data sharing with supply chain companies beyond the specific transaction.



Only 23% of respondents have an established program that identified and evaluates the potential use of new data to directly improve business performance

Based on our survey, the vast majority of the data shared between a company and its suppliers or customers is transaction data. Yet strategic data sharing with customers and suppliers is essential to unlocking the power of AI/ML. The critical management question is how to do it? Data trading is the answer. This is where it gets interesting because, unlike money, the value of data is relative. The value depends on how it fits into each company's strategic puzzle – how it enhances the algorithms.

Source: DSCI 2019 survey of 344 supply chain executives

Data Trading Examples: External

Footwear Manufacturer – Problem to Solve:
Improve demand forecasting for a popular women’s shoe

Needed data from the retail chain:

Age and gender of the buyer

Data to trade:

Comparative, aggregated sales of popular women’s shoe in other retail chains

Construction Company – Problem to Solve:
Shift project management schedule given material shortage caused by an unexpected supply chain disruption

Needed data from material supplier:

Revised product allocation and delivery schedule on a weekly basis

Data to trade:

Overall shifts in construction plan on a weekly basis so supplier can re-allocate product if possible

Consumer Electronics Component Manufacturer Problem to Solve:
Improve demand forecasting for replacement parts

Needed data from OEM:

Warranty return data for a specific product similar product from a related product group

Data to trade with Consumer Electronics OEM:

Volume of the replacement part sold to out-of-warranty repair centers for that specific product

External Value-Added Data / Service Bundle (Many-to-Many Through One)

Historically, trading companies have acted as a hub between suppliers and buyers.

In today's digital economy, platform business models play a similar role in linking buyers and suppliers. In both cases, the company in the middle is like the waist of an hourglass.

This position in the value chain creates a unique opportunity for data trading. But rather than going into the business of being a data broker and selling data, we advocate they should integrate data trading into their core services. Today's technology provides greater supply-chain visibility that threatens traditional trading companies by those seeking to "cut out the middleman." However, the same technology and visibility provides the opportunity to aggregate data and bundle it into current products/services to create new value, which reduces the risk of being cut-out.

"We have an endless thirst for data. We are constantly looking for third party data to enhance our model because our customers expect us to bring them the best innovative services at the right cost, with great quality and an assurance of supply. To do that, we need the right data. Data trading can be the tool to get the data we need and get more value from the data we have."

Richard Porcaro,
Head of Client Services & Solutions,
ChainIQ

Data Trading Examples: External

Customer Problem to Solve:

Improve their ability to predict possible supply disruption for a specific product

Data to trade:

Which suppliers of that product experienced significant production disruption in the last two years

Needed data from Customer:

Sensitivity to shipment delays for that product (number of days or weeks)

Supplier Problem to Solve:

How to allocate a specific product to customers during major, widespread supply chain disruptions

Data needed from Supplier:

Current inventory and available weekly production capacity for the specific product

Data to trade:

Inventory levels of Customers so product can be allocated to minimize disruption to any one customer

Customer and Supplier Problem to Solve:

How to quickly re-design a specific product to avoid materials or components that have become scarce or high-tariff

Data needed from Customers:

Acceptable alternative components

Data needed from Suppliers:

Availability of alternatives



CHAPTER 4

Getting Started with Data Trading: DSCI Data Trading Framework

DSCI Data Trading Framework takes the general concept of sharing data between departments or with customers and suppliers down to the specifics of precisely what data you want and what you are willing to give. It provides you with a framework for assigning a value to data and understanding what you are trying to improve with it.

In this section, we outline the stages for completing your first data trade, then building and maintaining an effective data trading program. We provide tips and tools to get you and your company started. This section applies to any form of data trading, though it focuses on 1:1 trading. This section can be used in conjunction with the attached DSCI Data Trading Framework Simulator.

The DSCI Data Trading Framework has three interrelated stages:

- 1. Preparation**
- 2. Negotiation**
- 3. Governance**

Developing a Data Trading Mindset

- Use a laser-focus to find data value gaps
- Find departments or companies that need your data
- Identify the missing data piece(s) to your puzzle

DATA TRADING: SOMETIMES THINKING SMALL IS BETTER

As we interviewed supply chain executives, we started to see a pattern in what came to mind when we said “data trading.” They tended to think big and complicated. Here’s a quick comparison of what many thought it would be and what we mean by “data trading” at DSCI.

TRADITIONAL WAY	DSCI WAY
“Big Data”	Targeted “Small Data”
Get as much data as we can	Focus on getting the exact data that will solve a specific problem
Get as much detail as we can	Focus on getting the right level of detail – don’t ask for all of the details if a summary will work
We need it as quickly as possible	Determine how often you would use it
We need large scale technology and complicated APIs to manage it	Use a spreadsheet if you need to
Complicated legal approval process	Quick legal approval — start with a restricted-use license
Compliance risks associated with trading Personal Identifiable Information (PII)	Focus on business information — don’t trade PII
Complicated data governance protocols	Govern and protect the data as you do your own
Can we trust them?	Trade with internal departments or trusted suppliers/customers



“Big data also tends to gloss over or ignore anomalies unless it’s crafted carefully to surface these to humans. That is, big data tends to be far more focused on correlation rather than causation and, as such, ignores examples where something doesn’t follow what tends to happen on average. It’s only by exploring anomalies that we can develop a deeper understanding of causation. If you think about it, following a big data approach is what powered our knowledge of the sun, moon, stars, and Earth for years. Still, it was only when Galileo peered through a telescope that we could start to understand more deeply how these celestial bodies moved in relation to one another.”

Clayton M. Christensen, *Disruption 2020: An Interview With Clayton M. Christensen*, MIT Sloan Management Review

Stage 1: Preparation

Thoughtful preparation is the foundation. Laser-focus is the essential element.

Data trading is best done by forming a small team to lead the project. Ideally, it would include people from different areas within the supply chain function — and possibly people from other functional departments.

Here are the steps in the preparation stage:

TIP: To get started, focus on business information, not Personal Identifiable Information (PII)

1. Identify the business problem you are seeking to solve or the performance improvement you want to make. You can start by identifying the general area — like demand forecasting. Think about algorithms you may have in use that would benefit from new or more data.
2. Get specific — the more specific, the better — to establish a measurable short-term goal. Example: improve demand forecasting for XYZ product by 10% in 6 months using new data. If possible, estimate the financial return in revenue growth or cost reduction. This will help get attention and buy-in.
3. Identify precisely what new data is needed and where it would exist. In other departments? In other companies?
4. Give the data you need a value on a scale of 1-10. Determine how helpful it would be to meeting your goal? Ideally, you want to identify data that would be a 10 to you.
5. Identify likely sources of the data – departments or companies. Prioritize the possible targets considering who is most likely to have the data and where you may get the best deal.
6. Think about how valuable that data is to them on the same 1-10 scale. This is clearly an educated guess but a useful step. For example, if the data is a 10 value to you and a three value to them, you have a great situation.
7. Now flip it around. Identify the data you have that would be valuable to the targeted trading partner. The higher the value to them, the better.
8. Give the data you want to trade a value to you. If the planned trade is with an external company, you'll want to start by using data with low-value to you (under a 5). It will be easier to earn approvals moving forward. If the trade is with another department, this should not be as much of an issue.

-
9. Estimate how valuable your data would be to your trading partner. This is the inverse of the previous situation. It would be great to find a situation where the data you have is a 3 value to you, but would be a 10 value to them. Seek the value-gaps. Remember, the value of data is relative. The more you improve at identifying value-gaps, the better your program will be. Ultimately, the value you have assigned the data you want and what you are offering is not necessarily part of the negotiation. These values are primarily used for internal purposes.
-
10. Develop a target list of the departments or companies that would have the data you need — and would be interested in the data you have to trade.
-

Stage 2: Negotiation

Negotiation is the second stage of the DSCI Data Trading Framework. Data trading negotiations have some specific areas that need to be addressed.

Many companies have an established negotiation methodology, and most executives that routinely negotiate with third parties have developed their negotiation style. We don't intend to provide a general overview of negotiation methods, nor advocate that you adopt a certain manner. However, we do support that you seek to negotiate trades that produce a positive result for both parties. By taking a mutual-gains approach to negotiation, it is more likely that the data trading relationship will be sustainable.

Beyond your approach to negotiations, there are specific issues that need to be addressed in data trading negotiations.

For example, the frequency and form of sending and receiving the data is one unique consideration for the negotiation. Be realistic about your needs and actual use, i.e., don't push for data daily if it would be just as useful if you got it once a month.

Related to the frequency is the level of detail that will be useful. If summary information or aggregated information will serve your purpose, don't ask for all of the underlying data. Consider the form and transfer method that makes it easiest for you and your trading partner.

Think through frequency, form, and level of detail in light of the specific problem you are trying to solve. You want to reduce the friction as much as possible.

Depending on the specific data you are seeking to trade, there may be regulatory considerations. That's why we suggest you initially focus on data that is not considered Personal Identifiable Information (PII) and regulated by laws like the General Data Protection Regulation (GDPR) in the European Union or the California Consumer Privacy Act (CCPA) in California, USA.

The other key consideration in this stage is earning the necessary internal approvals. Again, the more specific you are in defining the problem and identifying and valuing the data, the easier it should be to get the needed approvals. This is especially true if you have involved a cross-functional team and selected a goal that will benefit all involved departments. Also critical in the internal approval process is the idea of a "range" of approved options for bargaining. Your internal approvals may provide you with a minimum and maximum level of data to trade or give you a range of acceptable options related to frequency, form, and detail. It is important to enter into the negotiation with a clear definition of the acceptable range.

Here's a short guide to the specific issues that need to be addressed in data trading negotiations. Effective data trading negotiation involves balancing many different interests from different parties. It may require gaining approvals from multiple departments in your company – especially if the trade is with an external party.

1. Determine how current the data needs to be and how often you need it. Be realistic and practical. Don't ask to get it every day if you'll only look at it every week. Latency (how old the data is) and frequency (how often it is shared) are key elements.

2. Determine the form you need the data in, and the associated level of effort required to provide and utilize the data you are offering and receiving.

3. Determine the level of detail needed in the data. Again, be realistic and practical to make it easier to get internal approval and negotiate a trade.

4. Get approvals. Effective data trading requires thorough preparation and cross-functional approvals. You need to ensure you have internal agreement about what data you can offer before entering the negotiation. We believe that for your company to excel at data trading, you must balance the desires and concerns of the legal, IT, and business units. It will force cross-functional collaboration.

5. Contact the targeted trading partners (departments or companies) to determine if they have the data you need and if they are interested in exploring a trade. How you present the idea of a data trade will have a significant impact on their initial receptivity. Explain it in the way that we have here: keep it simple and start small.

6. Gauge their interest in the data you are offering. You may need to re-visit and adjust the data valuations as you learn more about how your trading partner values their data and your data. Remember, the valuation is an internal measurement for you to use. If you are trading with another department in your company, it may make sense to jointly determine the value with your trading partner.

7. Structure the agreement with the trading partner. To make it simpler and faster, we recommend you start from the position that each party continues to own their data, and the other party is given a restricted-use license. Key elements to address in the agreement are the specific data, the latency of the data, the frequency it will be provided, how it will be transferred, and how its use will be governed and monitored. More on governance in the next stage.

8. Complete the agreement and celebrate.

Top Five Issues to Keep in Mind

1. What is the needed data form, frequency and level of detail?
2. Who carries the cost of preparing and cleaning the data?
3. What is the financial impact of getting the data? More revenue? Less cost?
4. Are there regulatory and legal considerations?
5. Does the trading partner have sufficient data protection and cybersecurity controls in place?

TIP: To get started, we suggest you grant a restricted-use license to the data trading partner while you continue to own the data.

Stage 3: Governance

Governance is the third stage of the DSCI Data Trading Framework. This is where data trading activity is operationalized. Although governance is an ongoing activity, it is important to define it in the preparation and negotiation stages clearly.

A critical consideration with data trading, and with the Digital Supply Chain in general, is data governance, data protection, and the related cybersecurity controls. Once data is lost or compromised, its market value is diminished or gone. During the negotiation stage, it is important to include elements of how the data will be protected and how its usage will be monitored. For most companies, these are issues that are routinely dealt with, so there is no need to reinvent the wheel.

As previously mentioned, for certain types of data - principally consumer data — there are regulatory issues about the collection, processing, and sharing of certain types of data. The GDPR in Europe and the CCPA both regulate the collection, storage, and sharing of Personal Identifiable Information (PII).

Today, in many companies, the governance of PII is dealt with as a data privacy issue and managed separately from how confidential business information is handled. This often leads to different data governance rules within the company and, in some cases, to new silos. Often companies seek to restrict access to PII, while confidential business information usually needs to be shared internally and with third parties (contract manufacturers, distributors, channel partners, etc.). For these reasons, we suggest you start by trading confidential business information – especially if you are trading with another company.

It is critical to incorporate controls for data protection and cybersecurity into how you ultimately structure data trading agreements with external companies – both suppliers and customers. The quality of the data you receive is also an important issue. You need to think about how to protect yourself in structuring the data trading agreement and each party's responsibilities if there is a data breach. Access control is one important control because you want to ensure that access to your data is restricted and will not end up with your competitors through either negligence or poor management.

Data protection has two distinct components:

1. What processes do you have in place internally to protect the data you receive from your trading partner?
2. What processes does your trading partner have in place to protect your data?

Here's a short guide to the considerations and actions for effective governance. Most companies have established processes and controls for data protection and cybersecurity. These typically cover how the company protects its data, as well as how they protect data received from third parties. We strongly suggest you utilize the existing processes and controls as part of your data trading program. Use what is in place to reduce the friction of starting to trade data. If you have to develop something on a stand-alone basis, keep it simple.

1. Develop a checklist outlining the operational rules and responsibilities for the data trade.

2. Appoint someone to be in charge of managing and monitoring the data trading activity.

3. Establish and implement a procedure for monitoring the transfer, storage, and use of the data.

4. Determine who needs to access the data and establish the proper access controls.

5. Integrate the new data into your existing algorithm or data set.

6. Track how the new data is helping you to meet your goal.

7. Meet with the trading partner to see how your data is helping them and to gauge how effectively they are monitoring its use.



CHAPTER 5

Call to Action

Take a moment to think about opportunities and problems you've wanted to tackle — or performance indicators you want to improve. Pick one. Now think about exactly what data would help you solve the problem or improve the performance. Who has the data? Departments in your company? Suppliers? Customers?

Now think about the data you have. Who would it help?

Data trading is a concentrated, thoughtful process to improve your business performance by filling critical data gaps. Data trading is about getting more value from the data you have. Data trading is not about technology or APIs or data lakes.

The DSCI Data Trading Framework helps you obtain the data you need to unlock the potential benefits of the Digital Supply Chain. It helps to break down silos and facilitate collaboration with a purpose. It will help you build new performance-enhancing relationships with customers and suppliers. It gives you a way to systematically identify, value, and acquire the specific data you need.

You will always need to fill critical data gaps because the business environment and the needs of customers will always be changing. Developing a mature data trading process will give your company a competitive advantage. The right data trades will enhance your supply chain visibility and flexibility.

You can use the DSCI Data Trading Simulator to experiment with different scenarios, or as a guide to data trading. Consider setting up a couple of teams to compete and see how they score on the Simulator. Get in touch to let us know how you're doing and if we can help you accelerate your path to becoming an expert data trader.

Big data is here to stay, but sometimes thinking small is the better approach.



CHAPTER 6

DSCI Data Trading Framework Simulator

Introduction

You can use the DSCI Data Trading Framework Simulator as a way to test assumptions and build internal consensus or to guide you through an actual data trade. Using the Simulator will provide you with the tools to start data trading and a path to becoming a skilled data trader.

As a supply chain executive, you can be creative about ways to how to become a data trading organization. Here are a couple of ideas:

- Provide rewards to successful data traders (cash or in-kind)
- Set-up multiple data trading teams and stage a competition

Suggested Rules for the Simulator

- Form a small team of 3-6 people (Ideally the team should be cross-functional)
- In each stage, complete the task and give yourself a score. Be realistic with your self-assessed score. It makes the process more productive and the results more valuable.
- Identify an independent reviewer (for a scoring reality check)

Directions

- Complete stages 1, 2, and 3 by filling in the blank
- Enter your scores on the scorecard
- If you are using an independent reviewer, enter their score as you go or when you finish each stage.

STAGE 1: DSCI Data Trading: Preparation

		SCORE	VERIFIED SCORE
1. Identify a business problem to solve or performance metric to improve <i>(more business critical = more points)</i> _____		(1-10, ten highest)	(1-10, ten highest)
2. Define a Powerful Quantifiable Goal with a time frame <i>(more specific = more points)</i> _____		(1-10, ten highest)	(1-10, ten highest)
3. Identify specific data needed from others <i>(more specific = more points)</i> _____		(1-10, ten highest)	(1-10, ten highest)
4. Identify data we have that should be attractive to others <i>(more specific = more points)</i> _____		(1-10, ten highest)	(1-10, ten highest)
5. Calculate Data Value Gap for what we want ($5a - 5b = \text{gap}$) 5a. Value of their data to us _____ 5b. Estimate the value of the data we want to them _____	<input type="text"/> <i>minus</i> <input type="text"/>	(1-10, ten highest)	(1-10, ten highest)
6. Calculate Data Value Gap for what we can offer ($6a - 6b = \text{gap}$) 6a. Value of our data to us _____ 6b. Estimate the value of our data to them _____	<input type="text"/> <i>minus</i> <input type="text"/>	(1-10, ten highest)	(1-10, ten highest)
7. Identify and list departments or companies that are likely to have the data you want and be interested in a trade. <i>(more likely = more points)</i> _____		(1-10, ten highest)	(1-10, ten highest)
		TOTAL	TOTAL
		(max score = 70)	(max score = 70)

Preparation Score Levels

under 25 = Newbie 26- 40 = Just OK 40 - 55 = Master 55+ = Legend

STAGE 2: DSCI Data Trading: Approvals & Negotiation

	SCORE	VERIFIED SCORE
<p>1. Specify how often you would need the data for it to be valuable and how often you could provide your data. Be realistic – lower frequency may make it easier. <i>(completion = 10 points)</i></p> <p>_____</p>	(1-10, ten highest)	(1-10, ten highest)
<p>2. Get approval from relevant departments authorizing you to offer your data in a trade and defining the acceptable terms of ownership and use. <i>(more flexible range of approval = more points)</i></p> <p>_____</p>	(1-10, ten highest)	(1-10, ten highest)
<p>3. Determine how the data you receive will be collected, stored and accessed and gain any needed approvals. <i>(more efficient, lower time/cost = more points)</i></p> <p>_____</p>	(1-10, ten highest)	(1-10, ten highest)
<p>4. Determine the cost and effort of providing the data and gain any needed approvals. <i>(more efficient, lower time/cost = more points)</i></p> <p>_____</p>	(1-10, ten highest)	(1-10, ten highest)
<p>5. Contact the target department(s) or company(ies) to determine if they have what you want and their interest in exploring a trade. <i>(better data fit and higher interest = more points)</i></p> <p>_____</p>	(1-10, ten highest)	(1-10, ten highest)
<p>6. Determine if the target department(s) or company(ies) are interested in the data you are offering. <i>(higher interest = more points)</i></p> <p>_____</p>	(1-10, ten highest)	(1-10, ten highest)
<p>7. Conduct initial negotiation and structure of agreement. <i>(more mutually beneficial = more points)</i></p> <p>_____</p>	(1-10, ten highest)	(1-10, ten highest)
<p>8. Complete agreement. <i>(more mutually beneficial = more points)</i></p> <p>_____</p>	(1-10, ten highest)	(1-10, ten highest)
	TOTAL	TOTAL
	(max score = 80)	(max score = 80)

Negotiation Score Levels

under 30 = Newbie 31- 45 = Just OK 45 - 65 = Master 65+ = Legend

STAGE 3: DSCI Data Trading: Governance

	SCORE	VERIFIED SCORE
<p>1. Develop a checklist outlining the operational rules and responsibilities for the data trade. <i>(completion = 5 points)</i></p> <hr/>	(1-5, 5 highest)	(1-5, 5 highest)
<p>2. Appoint someone to be in charge of managing and monitoring the data trading activity. <i>(completion = 5 points)</i></p> <hr/>	(1-5, 5 highest)	(1-5, 5 highest)
<p>3. Establish and implement a procedure for monitoring the transfer and use of the data. <i>(more efficient, lower time/cost = more points)</i></p> <hr/>	(1-10, ten highest)	(1-10, ten highest)
<p>4. Determine who needs to access the data and establish the proper access controls. <i>(more efficient, lower time/cost = more points)</i></p> <hr/>	(1-10, ten highest)	(1-10, ten highest)
<p>5. Track how the new data is helping you to hit milestones toward achieving your goal. <i>(hitting milestones = more points)</i></p> <hr/>	(1-10, ten highest)	(1-10, ten highest)
<p>6. Meet with the trading partner to see how the data is helping them and to gauge how effectively they are monitoring its use. <i>(happier partner = more points)</i></p> <hr/>	(1-10, ten highest)	(1-10, ten highest)
<p>7. Achieve the goal. <i>(level of success in meeting goal measurement and timeline = more points)</i></p> <hr/>	(1-50, 50 highest)	(1-50, 50 highest)
	TOTAL	TOTAL
	(max score = 100)	(max score = 100)

Governance Score Levels

under 50 = Newbie 51- 70 = Just OK 71 - 90 = Master 90+ = Legend

DATA TRADING SIMULATOR SCORECARD

STAGES	SCORE	VERIFIED SCORE
Stage 1: Preparation	(max score = 70)	(max score = 70)
Stage 2: Negotiation	(max score = 80)	(max score = 80)
Stage 3: Governance	(max score = 100)	(max score = 100)
	TOTAL	(VERIFIED TOTAL)
	(max score = 250)	(max score = 250)

Data Trading Overall Scoring Levels

- under 105 = Newbie
- 106- 155 = Just OK
- 156 - 210 = Master
- 210+ = Legend

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