With the evolution of the industry,

the focus on data is growing
more and more because people see the potential of using

existing information to actually
make decisions for the future.

-As e-commerce grew and grew,
the need to track and understand,

a, what was going on in the warehouse on a given day,
trying to get orders out the door,

but also holistically what the patterns
were over periods of time

became more and more important.

[music]

-Did you know you consume
data more than you consume food?

Yes, you heard that right.

Whether you're listening
to your favorite Bad Bunny songs

or buying that sought-after Louis Vuitton bag,
we're feeding on data.

Hold on, working with data isn't just
listening to top hits or buying a purse.

In this episode of Jobs of Tomorrow,
we're exploring how supply chain companies collect

and utilize data and the challenges
they face in data management and analytics.

[music]

-The supply chain industry
is known for having huge networks

that stretch nationally and sometimes internationally.

These chains feed on data, which is as valuable
for companies as oxygen is for humans.

-Data is at the core of everything that we do.

We really believe that for the industry

to really innovate and then advance
in any shape or form,

you will have to rely more and more on data.

It's not just information,

but it's real time information and associating
different parts of information to extract insights

that's really going to drive the industry
forward knowing exactly when to react,

what to react to, and how to react to.

-Oana is a co-founder and CCO of Dexory

and knows how to leverage data to devise
intelligent strategies that fuel business growth.

We cannot deny the fact that data is everywhere

and that it's being used by almost
every individual across the chain.

-The industry produces a lot of data
because every transaction has data associated with it.

-That was Colman Roche,
the vice president of e-commerce and retail at Swisslog.

With years of experience,

he knows how to efficiently use data to create

strategic-level improvements that help
businesses gain an essential competitive edge.

With all that data floating around,
you might be wondering

what supply chain companies use it for.

Let me put it this way.

I wanted better quality sound
when I listen to Bad Bunny,

so I went online to see
the headphones that are available

and to see what others were saying about them,

which is probably a good thing because my first
choice had some not-so-amazing reviews.

I changed my mind, and I went with these instead.

In this case, the reviews I read online were the data
that helped me make a purchasing decision.

Similarly, companies rely on data to make

intelligent strategies and decisions to build
transparent, efficient, and resilient supply chains.

-With the evolution of the industry, just naturally,

the focus on data is growing
more and more because people see the potential of using

existing information to actually
make decisions for the future,

so no longer blindly trying to test something
in the world and then assuming for the best.

With cloud technology evolving
to serve data centers around the world,

the capability of manipulating and interpreting
large amounts of data very, very quickly

automatically that can increase the use
cases that you could bring the data into.

-Even more, data empowers businesses
to be well-prepared for unforeseen disruptions

that can be caused due to various factors
such as errors in the logistics networks,

parts shortages, equipment failures,
or even natural disasters.

That's how Kristi, the vice president
of innovation research and development

at Kenco Group harnesses the power of data.

-Within our transportation group we're doing
things like this particular product that's traveling

this route on this carrier is scheduled
to be at the warehouse on Monday at 5:00 PM.

However, because of X, Y, Z,

they are not going to make it until Wednesday
at 7:00 AM.

Then being able to make a decision on how do you shift
that to get that product there on time.

Where we're headed
and where we'd like to get is more prescriptive,

where not just giving me that information
and predicting that this is going to happen,

but now then taking that information,
feeding it back into the system,

and automatically making the changes

to positively impact the shipment
status for that particular shipment.

That's more of a prescriptive
where it's actually the machines telling you

what to do versus just telling you what's about
to happen and letting you make the decision.

-For companies like Kristi's,
using data for predictive analysis can be a lifesaver.

Delayed shipments due to any reason
can take a toll on manufacturing plans

and have ramifications that resonate
down to customers and even other product lines.

Imagine that your retailer runs a promotional campaign

to provide jerseys to soccer
fans ahead of a soccer league.

They placed an order for a thousand jerseys

with you and expected it to be delivered in a week.

Assuming that you have all the required material
to manufacture new jerseys in your warehouse.

Your worst nightmare comes true because your inventory

is not equipped with sufficient material for production.

Even if you order new material,
you won't receive it any sooner than five days,

which means you won't be able to fulfill
the order on time.

What's next?

You can't do anything.

Your retailer won't have jerseys to sell
to customers who will be disappointed big time.

This unfortunate incident is a result
of lack of visibility across the supply chain.

It impacts each participant, including you,
your retailer, and the customers.

Good Lord, that's frightening.

I hope I never get stuck in a situation like that.

Thanks to technologies like AI and machine
learning that enable predictive data analysis,

companies can gain visibility
across the chain and collaboratively work

with different stakeholders
to make real time data-driven decisions.

-It's about, first of all, internal data transparency
and data visibility, again, in near real time.

Then what we've done is we've actually
gone back and linked it to the shelf

in terms of what's the kind of inventory
that our retailer partners have,

being able to collaborate with our retailer partners

to build a more predictive ordering pattern

using forecasting techniques leveraging machine learning

to be able to predictively
forecast what's likely to happen.

Equally,
making that forecast available to supplier partners

so that they can start preparing
for the materials that we will need.

It's a combination of technology, collaboration,
and near real time decision-making.

-Biswaranjan Sen, or Bish,
is a chief product supply chain officer at Unilever.

Having worked in research and development
across various parts of the supply chain,

he recognizes the power of data and knows
how to leverage it for a company's benefits.

Is it as easy for everyone
as it is for Bish to capture and utilize data?

-Understand where you have bottlenecks
and how you can improve

within the warehouse that gives
you the opportunity to aggregate that data.

[music]

-Earlier, we explored how companies
leverage data to make well-informed decisions

and devise workable strategies
in response to disruptions

that could potentially hinder business operations,

but nothing's perfect.

Let's look at some of the challenges
of capturing and using data.

Supply chains are huge, complex,
and they generate lots of data.

As a product starts its journey
right from the time it sneaks

into someone's brain as an idea
through to production and delivery,

it pivots around various data points.

Let's follow the journey of an umbrella.

As the weather gets hot or rainy,
umbrellas will more likely be people's go-to accessory.

The first data point worth considering is the weather

because it will influence the decision of production,

should the company manufacture more umbrellas or not.

Moving forward, as the umbrellas are produced,

the company needs to be on top
of when they'll be ready for dispatch.

The next data point will be the time required
to manufacture, pick, and pack those umbrellas.

This data point will help decide
the estimated time of dispatch.

Once the umbrellas have been shipped
to respective retail stores and sold to customers.

A valuable data point would be customers buying patterns

to decide if there are any monetary benefits

of rolling out more umbrellas
or similar products into the market.

That's a lot to pay attention to.

No wonder we're talking about

intelligent data and intelligent people here,

but here's the moment of truth.

The rapid growth of tech in supply chains has increased

the amount of data and the need to use it effectively.

-As e-commerce grew and grew,

the volumes of data that were created

were larger and the need to track and understand,

a, what was going on in the warehouse on a given day,

trying to get orders out the door, but also holistically

what the patterns were over periods

of time became more and more important.

-It's crucial for companies to keep pace with data

creation and use data points as an engine

to keep rolling, but it's easier said than done.

-Historically, to capture data from warehouses,

you just need to deploy a lot of human capital
to manually find things, scan them, record them,

and then use their time
to put that into a digital system

so that the data manipulation can happen on that end.

-Whether it's managing ledgers or creating invoices,
whenever we needed a solution to save time,

automation rode up like a night with speed
and visibility as its horse and shining armor.

Only, instead of saving the princess,
they're creating efficiencies in workflows.

-Understanding where the inventory is,
if there's any inaccuracies,

if anything has happened
to the pallets or the boxes in their sites,

once they know that, as well as being able to process it

very, very quickly and make some decisions
based on that information,

which is where we come in,

because with our autonomous technology,

we can pretty much digitize 15,000,
20,000 pallets an hour versus obviously the human labor,

which can take quite a few weeks
to actually go through that.

It's just a much better speed.

Also, a lot more information can capture in one go.

-Now you've captured data,
a lot of data, but how do you analyze it?

After all, that data isn't worth much
unless it tells a story and is actionable.

Instead of having your brain turned to mush,
there's an easy way out.

-For example, if I place an order today

and it's supposed to ship out
by the end of the day today,

then the warehouse operator needs to have confidence
that's going to go out at the end of the day.

They need to know where that order is almost
at every second, be able to say, "Okay, well,

these 400 orders are going to be processed
within an hour to get them out the door.

They need to be picked and brought to a packing
area and packaged and go out the door."

Now you're slicing events down into smaller
and smaller steps so that by the time,

for example, the UPS or FedEx truck comes,

you need to have a high level of confidence
that the product is actually going to be out

the door and the order's fulfilled
and potentially have happy customers.

That's a lot of data.

Each slice of time is allocated
which gives you the ability

then to take and look at that and manipulate the data.

-That perfectly justifies the saying, less is more.

By taking a smaller slice of the data to analyze,
it's also easier to find the weak points

that can become obstacles in achieving business goals.

-Understand where you have bottlenecks
and how you can improve within the warehouse.

It gives you the opportunity
to aggregate that data across,

let's say,
if you've got three or four or five warehouses

in a network and take a look at what the patterns are

and where there are differences
across the nodes of a network.

It allows you to understand
the business in a more holistic way.

Maybe take a look upstream and say, "Well,

we've got replenishment problems
up here and the boat traffic coming

into a port in Long Beach

isn't getting to the warehouse in time,

which is causing shortages and unhappy customers."

There's lots of different ways

that data can be looked at.

-Data being collected

and interpreted across supply chains,

including software used in companies means

there are other things to be considered as well.

Instead of simply focusing on people

and machines that capture data,

companies should look at the infrastructure too.

-When you have software running on databases,

particularly think peak periods, black Friday,

cyber Monday, and those types of things,

when everything is just going madly fast,

it produces a lot of data,

but then you're also really pinging on servers
and databases and those types of things.

It's caused companies to have to take
another look at how you build out

all of that infrastructure because if you're up
to 95% or 98% of the warehouse's capacity,

but now you can't go any further
because the IT environment doesn't do it,

or you're running reports which slow
down the production server,

those types of things become very important as well.

There's a whole infrastructure that has got
more and more attention over time.

-Once all participants of a supply
chain including human workforce,

equipment, automation, data, tech,
and infrastructure are properly aligned,

there are a couple of things that companies can ponder.

-The first part of it is the ability

to make use of near real time signals,

and the second part of it is building the bridges

between how much in near real time
can I get the signal from the shelf

and how quickly can I transmit
it back to my supply partners?

The challenge of data availability today

I think is there's enough data being generated,

there's enough data that's available,
is in a question of being able

to wire that back in a synchronized
manner from shelf to supply.

We are at the very early stages
of the journey to make it near real time

and we are working with
quite a few of our retailer partners

and software suppliers to test
out the sync and the ability to ingest

that data in near real time
and orchestrate the business based on that.

-Whether it's a natural disaster
or whether it's a pandemic

or whether it's just shipping lanes are backed up,

whatever the case may be, how can we be proactive
about that and help our customers be ready?

[music]

-So far, we've wrapped our heads around how data
can be captured, analyzed, and utilized.

There's a lot of cognition behind it.

Of course,
the human brain is capable of many complex tasks,

but when technology gives us an option
that might help us ease the burden, why not take it?

-The more technology we can have around that,
I think the better.

It's not just about moving things around anymore.

It's about how one robot moves something
around and collaborate with the picking robot,

and then obviously with our technology,
collecting the data,

and then all the way out to the transportation.

Linking all the data points together, I think
is going to be a very, very exciting space to be in.

-Like I said, humans have the unique ability
to think and solve problems from past experiences.

These traits combined with emotions
such as self-awareness, passion,

and aspiration, make them
the best at mastering complex cognitive operations.

This is why some supply chain tasks
will always be dependent on humans.

-There's lots of item-picking robots,

but when you open a case and everything
has been packed into the case

has been shipped for thousands

of miles in trucks and it's all shaken up,

and you go to a supermarket

and you pick out something that the rectangular shape,

let's say eyedrops for contact lenses and things
like that, and they got those glossy surfaces,

well, after being shaken around for thousands of miles,
they're actually inclined to stick together.

Robots have real difficulty trying to find
an individual one and taking it out of a case.

It's like breaking a seal.

There are things that as mundane as those are,
that will always require humans,

at least in my mind, they always require humans.

Maybe if we go forward 40 years,
that will no longer be the case,

but it takes a long time for robotic sensitivity
to be able to deal with those types of things.

-What's sometimes rocket science for robots

is just normal for humans, and it makes sense, too.

Machines and artificial intelligence
are programmed to work a certain way.

They don't respond to any unexpected thing or aspect,

even if it can influence further actions or decisions.

An efficient supply chain ecosystem
is a combination of well-equipped human workforce,

automated tools, tech, and resilient infrastructure,

each of which conceives data in its own way

and contributes to making the best decisions to deal

with uncertainties and to capitalize on opportunities
to deliver a great customer experience.

-The more proactive we can get with
our customers about their supply chain

and how we're going to do things
and how we're going to mitigate risk,

and that whole concept of being responsible

within the supply chain
mitigating risks that are coming,

whether it's a natural disaster
or whether it's a pandemic

or whether it's just shipping lanes are backed up,
whatever the case may be,

how can we be proactive about
that and help our customers be ready?

I think those are the trends
that we're seeing that we're really excited about.

How do we deliver value as a third-party partner?

-If you are intrigued by the idea of harnessing data,
technology,

and processes to deliver
an exceptional customer experience,

the dynamic supply chain industry
has ample opportunities for you.

Let's find out what can help
you get on the team of supply chain enthusiasts,

aside from your inquisitive nature.

-There's been a proliferation
of studies in things like supply chain,

supply chain engineering,
and those types of things which are relatively recent.

You can come into the supply chain business
from a variety of technical backgrounds.

Industrial engineering is a classic.

The key thing is that most engineers,
regardless of which type of engineering they come

from are leveraging desire to solve problems.

There are lots of different types
of roles in this business.

For example, there are some engineers

who really like being involved
in operations in a warehouse,

for example, and really digging
into how to improve each step of the way.

There are some who like to design
robots and figure out how to solve

a different set of problems
or who are really into data and data analytics,

whether it's on the machine level, almost bits
and bytes trying to optimize machine operations,

or on the more holistic level
looking at the big data types of things.

-While the industry bestowed multiple
growth opportunities on data professionals,

it also witnessed various success stories
of people who were simply data enthusiasts.

They had no prior academic
background or experience in data analytics.

-Some of the people that I've met,
I've had the good fortune to meet in this industry,

have come from things like civil engineering
backgrounds, which have nothing to do with electrical

engineering or mechanical engineering or data or that.

It was the basic engineering characteristics

that really come to the fore in terms
of being really, really fantastic.

Not a couple of people
are from chemical engineering backgrounds

who have done fantastically in this business as well.

The variety of backgrounds
is quite interesting in its own way.

-For innovation to cater to diverse people,
it has to come from different minds.

Working with the same idea,
the industry welcomes people from all walks of life.

-We're still a very young team.

We're just under 50 people at the moment,

but we're quite fortunate
to be able to attract very diverse talent.

We're based in London, in the UK,

which automatically is much more diverse
city than a lot of the other European ones.

The first step was actually at the international facet
of the team was very,

very early days observed.

We're also doing okay in terms
of having enough women on the team.

We're working on that too to grow it.

-For those of you who may have just
stepped out of a high school,

there's an opportunity to build a strong foundation
for your professional career ahead.

-We have a huge opportunity to really target people

coming into college and coming out of high school.

A lot of municipalities have STEM initiatives.

Trying to get kids into more science,
technology, engineering, and math fields,

and really how do you give them

the visibility to what is supply chain

as children are coming out of high school.
What is supply chain?

What is it? What does it look like, 101?

Give them a foundation so that they can consider
it a real potential for their career path.

-If you want to help customers like me find
the right pair of headphones or any product,

for that matter, by effectively providing the right data
and ensuring smooth supply chain operations

from procurement through production and distribution,
you belong here.

Thanks for watching.

I'm your host, Kristin Marand.

We'll see you on the next episode
as we explore the jobs of tomorrow.

[music]