

LET'S GET DIGITAL:

REMOVING BOUNDARIES TO AN EFFICIENT SUPPLY CHAIN

Will Heywood (00:10):

Welcome to All Business. No Boundaries. A Collection of Supply Chain Stories by DHL Supply Chain, the North American leader in contract logistics. I'm your host, Will Haywood. This is a place for in-depth discussions on the supply chain challenges keeping you up at night. We're breaking beyond the boundaries that are limiting your supply chain. Let's dive in.

Will Heywood (00:28):

Today's theme is "Let's Get Digital: Removing Boundaries to an Efficient Supply Chain." My guest is Adrian Kumar, Global Head of Operations Science and Analytics for DHL Supply Chain. Adrian, welcome and thanks for joining me. So, we hear the term a lot, but what do we mean when we say digitalization here at DHL Supply Chain?

Adrian Kumar (00:51):

Well, that's our systematic strategy for the fast deployment of emerging technologies at DHL. We don't necessarily just want to sit back and wait for the right opportunity, the right customer, and the right operation. We want to get out ahead of this because there's so many emerging technologies, so we have a systematic way. We have a product funnel. We go out, we research different technologies, we research those different technologies and we pilot various technologies and then we decide which ones are going to make it or not, which ones we think, could have broad appeal across a wide range of operations and which ones might be more niche and which ones really, they're just not going to make it. They just didn't really pass any pilots or, or any, um, any preliminary testing. So that's really what our digitization strategy is. I think we've been doing digitization in some way, shape or form for a long time. Maybe a prime example of that is our use of TMS and WMS is across most of our operations.

Will Heywood (01:57):

Yeah. So say a little bit more about the WMS and TMS and how that factors into some of the more cutting edge things you're doing.

Adrian Kumar (02:04):

Yeah. Well, the WMS is really the backbone of the operation and that's what controls the inventory and gives all the different assignments in the warehouse operation and inventory accuracy is never more important than it is now when you're taking orders from all different sources online, from your stores, et cetera. And the WMS is ultimately what a lot of these different technologies need to plug into. Whether they're new cutting edge technologies like collaborative robots or vision picking. They're all plugging into the WMS and we're even enhancing the WMS with some of our micro services to do more optimization outside the WMS, but to communicate with it, so the WMS does remain that system of record.

Will Heywood (02:54):

Right. Makes sense. So, talking about barriers to companies who want to kind of launch on a digitalization journey, how does DHL work with those companies to help remove those barriers?

Adrian Kumar (03:06):

Well, yeah, there's been a lot of barriers in the past because, you know, if you take a look at traditional warehouse automation there were sometimes very high hurdle rates that you had to get over as barriers to entry to allow you to implement those types of technologies. A lot of those technologies, they required their own infrastructure and they required a certain level of

investment. So unless you're a very large retailer, or someone who's been around for a long time and knows your profile, is very confident in your business, you didn't make those types of investments. It would be kind of an onerous proposition. But now with some of these emerging technologies, they're a lot more scalable and a lot more flexible. We have operations that might've started with 10 collaborative robots and over time, you know, we added another 10 and now we're up to 60 collaborative robots.

Adrian Kumar (04:04):

So, to be able to do that and work with an existing infrastructure, we don't need to take the entire warehouse and kind of throw it out the window and then put in a new system, a new material handling system. You're working with the existing infrastructure that you already have in place. A lot of those barriers are coming down. Other things we're seeing are new, different types of commercial models. You might've heard of robots as a service, software as a service, and a lot more flexible commercial arrangements with some of these new emerging technologies as well.

Will Heywood (04:35):

Right. So to dimension it, I mean, some of the earlier large scale investments versus some of the more scalable solutions, what are you seeing in terms of total dollars required?

Adrian Kumar (04:46):

Yeah, I mean to dimension it, some of those previous technologies, they might have been tens of millions of dollars. I mean, not in every case, but sometimes, that's what you're talking about because they are such large material handling systems and what we see is that you might be able to get started with some type of a solution for a fraction of that. I mean, it really depends. Are you just putting in a drone to do inventory cycle counting? Are you putting in a fleet of 10 robots? But there are a lot lower barriers to entry, especially when you can lease some of this equipment on a monthly basis as well.

Will Heywood (05:26):

Yeah. So big data is a buzz word around our industry as well as many others. Analytics is in your title. Can you talk about how DHL is thinking about big data and all of it that's generated in the many operations across your network?

Adrian Kumar (05:45):

Yeah. So, first off, you know, we recognize you have to be able to store the data because there's a lot more data being generated. Now, you take a look at some of these operations that might have collaborative robots. Well, those robots are collecting more data. They might be collecting data on their dwell time, on their travel time, on different congestion factors. So, we're picking up a lot more data. You know, even some of our equipment might be connected to the internet. So, it's talking to each other and we're able to pick up, you know, congestion zones and all those different things. So a lot more data needs to be stored. That's why we've invested in data lakes to be able to store this different type of information. And then what do you do with it?

Adrian Kumar (06:27):

Well, now that you have this much data, you have to be able to analyze it and analyze it pretty quickly. Some of the, some of the guys that we've hired, these data scientists are coming in with new tools. They're using Python, they're using R, and they're using all different types of libraries. And they're able to dissect this data really quickly. We just did a project with a large retailer and, as you can imagine, they're seeing their volume surge differently and new categories really spiking up. And we're able to do a lot of different types of analysis, analyze what skews we're moving, and maybe beforehand they were picked in less than case, now they're picked in cases. Maybe before they were picked in cases, and now they're picked in layers. We're able to look at that across all their stores, across all their thousands of skews and get to these answers really quickly by building these different types of data models and make suggestions on how they can ship stuff differently.

Adrian Kumar (07:22):

Another example is our transportation optimization package that we built in house called D3TO. This package here can analyze 1 million shipments and do it in a couple and say, what were the optimal modes that those shipments should've gone through? Should they have gone LTL? Or maybe there's opportunities to make truckloads, maybe opportunities for different pool points, consolidation, round trip moves, dedicated fleets, all of this stuff that in the past might've taken us three weeks to analyze because we would have been toggling between software, we can now do in a couple days because we have a powerful, a powerful software package that we've built to be able to do all this.

Will Heywood (08:08):

Interesting. And then how does that translate to kind of business value for your customers?

Adrian Kumar (08:19):

Well, you know, this is what it's all about, right? To be able to show customer savings if they make some changes in their business. So first of all, there might be opportunities to just do things differently with their existing business. But then second of all, you know, if they're able to consolidate freight a little longer, to trap freight a little longer, if they maybe have that trade-off between service leveling costs, if they have a different service level, we might be able to generate a greater economies of scale within the shipments. And then also within the processing, all those different tradeoffs, those are things that we can analyze for our customers and show our customers the cost benefit of that.

Will Heywood (09:04):

So you mentioned the term data scientist, which is another thing that gets thrown around fairly loosely these days. And it got me thinking about kind of the talent profile that you're managing at DHL Supply Chain. And I'm just kind of curious, you know, are you finding a lot of that resource on the market? Are you developing it internally? How are you thinking about that? Because it seems like it's a bit different from what we would have thought about 10 years ago.

Adrian Kumar (09:34):

Yeah. So, you know, we've gone to the universities, and I think we recognize that it's really hard to kind of find people who've been in this industry for a long time and maybe are familiar with a lot of these new and emerging technologies and software packages like Python, like AR. So, we're willing to make that investment. We're willing to hire people right out of school and say, okay, it might take a little while to learn our industry, but you're coming with these different fresh skill sets. And our industry has seen a lot more investment. And I think our industry is a lot more appealing to this level of talent now than it's ever been because of all the attention that supply chain has garnered recently. So we're able to do that and we always want a good mix, right?

Adrian Kumar (10:22):

You just don't want to just go to the universities and that's great talent there. But there's also great talent that might be hidden in our operations. People who took a job in operations right out of school, but they have a technical orientation. Those are people too who could be trained in some of these different tools. So, I think you need a good mix of skills, a combination of people with supply chain experience and maybe some fresh perspectives. And that's the way you form a really good team that considers all the different angles when we're doing these types of projects.

Will Heywood (11:01):

Yeah, it's an exciting time to be in the industry probably as much so as anytime I've been in it. Uh, on the technology side, you know, if you're thinking about it from a customer standpoint, you're seeing because of the very high level of investment in some of these emerging technology companies, there's just sort of a blizzard of solutions coming on the market. So, if you're a manufacturer or retailer, it could have the tendency to be kind of overwhelming. Can you talk a little bit about how you guys help customers evaluate different solutions and how you put them on a path to digitalize for lack of a better term?

Adrian Kumar (11:40):

Yeah. So, there are a lot of technologies out there as you said, and this industry has seen a lot more investment in technologies in recent years, a lot of activity and people acquiring some of these tech companies, which leads to more people wanting to get into this game and start up their own companies. So, we're getting a lot of good talent coming into this industry as well. So, we're seeing more and more solutions on the market. We have to keep track of it all. So that's why we have that accelerated digitization team. They're tracking all these different technologies. Then we're putting them through the product funnel. So, to be able to categorize these different technologies and what we do to identify what technology suits which sites, we've created a database of all our different operations around the world and capture some of those key attributes, the shipping profile, the inventory profile, the size of the product in those different distribution centers, which is going to help us determine the fit.

Adrian Kumar (12:51):

Some of our operations are very small in terms of order size, and they're picking small units. Some of our operations are picking big bulk pallets, obviously different types of solutions. You might be talking about automated forklifts in one,

collaborative robots or vision picking in other types of operations. So those are the types of things. I mean, our CEO, Scott Suredin, a year and a half ago mentioned that we were going to make a \$300 million investment in 350 out of our 430 facilities for these different emerging technologies. So, we needed a way to kind of scale up and identify those different sites very quickly.

Will Heywood (13:35):

Yeah, that's a big investment in a lot of scale. What do you see coming next? What's on the horizon for the digital journey or revolution?

Adrian Kumar (13:46):

Well, you always need to keep your eye on what's coming next because what might not be applicable today because of a certain price point or because of technical limitations, tomorrow that that might change, right? Prices tend to come down over time and the technical capabilities of a lot of these different solutions increases. You might've heard of Amazon's piece picking challenge. They tried that for a few years to try to get a robot to pick an item out of a mixed skew. A very, very challenging task and the companies that participated in that, you know, they got better year after year, higher accuracy rates, and quicker turn.

Adrian Kumar (14:31):

So you always have to keep an eye on that and current trends. When is something going to be ready for prime time with a certain level of accuracy, quality control, and at the right price point. We look at things like the role of hardware versus software, you can accomplish a lot of what you want to with it, with more of a pure software optimization type solution that might come at a different price point. So those are different things that we're always going to keep an eye on. Also, I think to get at what's next, we want to tap into our employee workforce. So we've had several hackathons here in North America and throughout the world every year. We're doing these different hackathons, challenging people to come up with different ideas and then give them prizes for the teams that come up with some of the best ideas.

Adrian Kumar (15:29):

And then we also have a startup lab. That's our internal venturing program where we ask people from all across the business to submit their different ideas, concepts, and then the company makes an investment in them to try something out, to go and build something. You know, maybe its solar panels on trucks, or robots that can do different picking and packing. But those are things that our company is willing to make that investment in because I think a lot of these ideas, they're going to come from our employees. So that's how we're finding out about what's next and what could be out there for tomorrow.

Will Heywood (16:09):

And how have the associates received these automated technologies coming into the warehouses? Are they accepting of them? Is there a kind of change management process you have to put into place?

Adrian Kumar (16:21):

Yeah, I think it's, it's been really, really good. And, as far as reception goes, I think a lot of our employees want to work alongside these collaborative robots, especially if you had to walk five miles a day to pick an order, and a collaborative robot allows you to kind of reduce that significantly. And then you get to work alongside a collaborative robot, learn about a different user interface. That could make your job a lot more appealing and exciting if you get to work with vision picking and Google glasses to help you identify items to pick in your warehouse. That could be a lot more kind of interesting to people on the floor, to the general management, to the supervision, than an operation that didn't have any of those types of technologies. So, I've seen it excite and motivate our workforce and just be something that is seen as something that helps them do their day job a little better.

Will Heywood (17:30):

So, it's not just the engineers anymore who get to work with the cool stuff, right?

Adrian Kumar (17:34):

No, exactly. I mean, everyone's kind of working with this equipment in our different warehouse operations. You know, especially when you have these different types of technologies for piece picking, you're working with multiple different types of robots every day.

Will Heywood (18:01):

If you enjoyed the conversation today, please share it with a friend. You can find us online at logistics.dhl.com, follow us on LinkedIn and Twitter @DHLSupplyChain. If you would like to continue the conversation or leave feedback about the episode, please drop us a line.