

The Future of Digital Supply Chain Twins

Evaluating the Long-Term
Potential of Digital Twin Adoption

The Future of Digital Supply Chain Twins

Evaluating the Long-Term Potential of Digital Twin Adoption



Executive summary

Supply chains have faced challenging times recently, and the future remains uncertain.

Many businesses are experiencing an increase in supply chain disruptions reverberating down to the customer. A rapidly growing population adding to the swell of demand, the threat of a looming recession, and complex logistics systems create an incredibly delicate balance. We are facing a pivotal time for the future of supply chains.

Media sources have been outspoken about the supply chain crisis, casting stark warnings and reminders of the fragility that exists. Finding solutions now for problems of the future is crucial. Knowledge gained through past challenges and ongoing digital advancements will help pave the way for smart future planning.

Supply chain issues extend well beyond corporations; they impact humans on an individual level. The baby formula crisis of 2022 is an excellent example of a severely disrupted human need that demand couldn't be met. The extreme lack of supply caused panic among parents and caretakers and threatened the health of many infants. Problems like this are unfortunately far too common, but with the right technology and advanced planning, they can be avoided. There are plenty of external factors affecting supply chains, and it would be easy to blame them for all the disruptions, especially since we have no control over them. The truth is, however, that most of the problems that disrupt businesses occur within the company's four walls. Focusing on what can be controlled internally will help build a strong and resilient supply chain. Working with all involved partners is critical to determine areas of improvement inside a business and planning for adversity. Risk management is more critical than ever for the future of supply chains.

Technology and Artificial Intelligence (AI) have become key players in the supply chain and logistics world. A digital supply chain vastly reduces wasted time and energy devoted to repetitive tasks and ensures more accurate results. Digital twins provide an ongoing view of specific processes and associated bottlenecks across the supply chain in real-time. Problems can be addressed before they balloon with little human intervention.

CHAPTER 1.

Introduction to Digital Twins

A digital twin is a dynamic, digital replica of a person or activity built from real data to analyze processes and provide feedback. This digital replica can virtually test variable situations and provide critical insights, a historically expensive and time-consuming process.

Digital twins, although commonly associated with supply chains, extend to many other areas of the business. Using digital twinning as a form of model-based analytics is also advantageous in manufacturing and product development.

Digital twins can be created for your entire supply chain, offering a complete picture of your end-to-end process, but that is a massive undertaking and might not be practical at the moment. If you need data relating to a single or specific supply chain activity, you can build a use case around it. Developing digital twins for specific use cases offers a more manageable solution to an immediate need. Over time, these valuable use cases can work together to simulate the entire supply chain.

The benefit of a digital twin depends on the specific use case. Some common applications include measuring Key Performance Indicators (KPIs), vetting the ideal supplier, and managing the order process. When it comes to KPIs, a digital twin provides automatic tracking, eliminating both wasted time and the high probability of human error. Additionally, data gained through digital twins can be used to choose the ideal supplier for specific jobs.

The ability to efficiently process large amounts of data allows for more precise customizations and overall optimization. Even order management is supported by digital twins that supply unbiased, fact-based suggestions to ensure the most efficient outcome. The models created by digital twins are not a substitute for employees but are intended to assist the people working on that use case by providing digestible information in real-time.

A current challenge to the digital twin landscape is their close relationship with specific analytics tools. This makes them highly customizable and not easily repeatable. Many use cases are built around a tool stack used for a particular activity. Manufacturers with many different products often have varying tool stacks - meaning creating a digital twin is beneficial, but scaling is nearly impossible. This leaves various activities along the supply chain with disparate use cases and stand-alone digital twins. Having the digital twin is immensely beneficial for each job, but the benefit loses some luster when it can't be connected to other twins along the supply chain.

CHAPTER 2.

Digital Twin Benefits

Despite scalability challenges, digital twins are gaining traction rapidly, and the benefits are immense. Looking to the future, digital twins offer a promise of high-level automation by streamlining the orchestration aspect of manufacturing. The ability to reduce or eliminate paper pushing means decreased risk of human error and more time for employees to focus on strategy.

Digital twins are expected to assist and support employee decision-making. They digest massive amounts of information and provide instant feedback.

The goal of digital twins is not to remove humans from the supply chain but rather to increase their efficiency. Picture a digital assistant that can process data instantly and offer suggestions to perform a task better. Production itself will not necessarily be automated, but the supporting paperwork, shop orders, and other important but monotonous work will be managed by technology.

When planning for the future of a strong supply chain, less emphasis should be placed on making the overall shop automated, and more focus should be placed on specific use cases for automation. When digital twins can provide the system modeling needed to help people perform their job efficiently, the entire supply chain functions at a much higher level. Digital twins will vastly increase the quality of work by demystifying contract terms and providing clear directions on what to build and how to build it. Based on the volume of data a digital twin can process and expel, system specs will be well understood by the employee.

Digital twins provide powerful data about an object, person, or process. They offer a seamless two-way flow of information creating immense and immediate benefits. The true power of digital twins is when they can be connected together to work as a cohesive unit. As models are built to address use cases, consider connecting them for a more impactful and broad representation of your supply chain.

Automation has been historically used to reduce people's workload. With digital twinning, automation should be approached differently, it should be used to enable people to be more efficient. Do not waste time automating non-value add activities. Instead, shift the focus to the people and the processes that ensure success.

People can have digital twins as well, and you can build cognitive systems to leverage their abilities and elevate their performance. Waste in orchestration is an area where we will see major benefits from digital twinning, especially when it comes to people. The data gleaned through digital twinning can help people focus on what they need to see, and pay attention to what is going on. Use cases can be developed to help direct employees and involve the partners, distributors, and suppliers needed to be successful. When everyone is given the same data in the appropriate context, it becomes an asset to the project.

The problem with technology and automation is that it often excludes people. In all reality, people are amazingly intelligent and data acts as a multiplier. Data is great, but without people, it loses its power. Data obtained through the use of a digital twin can be delivered to the people along your supply chain, encouraging them to make the best decisions for their department. Using this data a step further and sharing your findings with partners and suppliers beyond the four walls of your company empowers these members of your supply chain for success and directly benefits your business.

CHAPTER 3.

The Future of Digital Twins

Understanding not only what a digital twin is, but how it benefits both the company and employees is important. It's crucial to think ahead when planning your supply chain's future. So let's talk about what we think the future benefits of digital twins will be.

In the immediate short-term, digital twins will continue to be an ideal solution for specific use cases. If you need enhanced data on a specific function of your supply chain, a use case can be built in the form of a digital twin to collect and analyze that information. The results can then be used to refine the process and increase efficiency or solve the problem that created the use case.

Looking further out as a more midterm solution, digital twins will likely redefine the process of orchestration. The ability to remove people from orchestration and focus them on production and strategy would not only save time, but greatly increase quality. Routine tasks (paper pushing if you will) often yield the most mistakes due to their repetitive and mundane nature. Automation on the other hand doesn't make mistakes. Using digital twins to develop models for shop orders and other paperwork would guarantee organization and high-quality record-keeping.

The long-term benefit of digital twinning may still be very far in the future, but the goal of prescriptive and autonomous processes is clear. In other words, creating a system that can function autonomously, but also has the ability to suggest changes in real-time, or even make those changes.

Autonomous systems are still very much a future goal, although they are not that far out of the realm of possibilities. Google Glass was an example of a great first attempt at autonomy. While it was not successful, likely because the world was simply not ready, the concept holds strong. Having a wearable device that can offer cognitive and predictive guidance would be a powerful tool. Technology and the human brain make a strong team.

With autonomous technology, individuals are empowered to go where they need to with confidence. It will be a very long time before we have cognitive technology that we fully trust, but predictive automation is on the horizon.

CHAPTER 4.

Getting Started with Digital Twins

The future of supply chains is digital and twins are going to fundamentally change how business is performed. The vast amount of benefits offered by digital twins is not even fully recognized yet. Establishing the technology now is a step in the right direction, but laying the groundwork is equally as important.

Digital twinning will require training and reassurance for the people in your company. Outside of scalability, the next biggest concern with digital twins is the cultural challenge. People are concerned that technology will eliminate their jobs. This has been a longstanding fear, and yet the manufacturing industry still can't seem to secure the help they need. Overcoming technical issues might be easy, but troubleshooting the human side is delicate.

Technology is a wonderful enhancement to companies, but it is not a replacement for people. The greatest transformations in technology all exist for, and because of, the people behind them. With digital twinning throughout a supply chain, data can be synthesized and accessed by all partners ensuring that everyone is on the same page. Giving people the power to make their company great will only pay off in the long run.

Tada offers a unique solution to one of the largest digital twin challenges - disparate data.

Tada helps you digitize your supply chain and unleashes the magic of data with unparalleled speed at an unprecedented scale, allowing our customers to securely connect data silos within their organization and externally with their partner enterprises. We offer the fastest deployment in the industry, with a running solution in 6-8 weeks.

The Tada platform starts with creating a digital supply chain twin of your organization. When combined with a data fabric, it creates our patented **Digital Duplicate**[®]. It uses intuitive workflows that seamlessly integrate with data across your enterprise. AI/ML algorithms deliver personalized tools and workbenches that enable the right decision-making processes for the right users, so they can draw intelligent, actionable insights.

Our no-code platform offers infinite navigation on both mobile and desktop. It provides a rich set of tools, including in-app forms, notifications, alerts, and semantic messaging capabilities to create new workbenches. Users can also modify existing workbenches to suit their supply chain needs.



 **For more information, [request a custom demo today.](#)**