HOW SUPPLY CHAINS **CAN SAVE THE WORLD**

SUPPLY CHAINs save the WORLD

Growing concerns about climate change, resource consumption, waste, clean water and other sustainability issues have brought the global community together to define a shared set of sustainability development goals, as well as a plan for the next decade called 2030Vision. One enabler of achieving these worldwide goals is digital and e-governance — including the use of advanced technologies, including artificial intelligence (AI), to measure environmental and social impacts, automatically make responsible corrections, and optimize operations for sustainability. Though the sustainability challenge grows more complex every day, these technologies can help businesses to operate responsibly — and profitably — via reduced waste, more efficient production, smarter transportation strategies, reduced resource consumption and other stewardship practices. Learn more about how AI-enabled supply chains can save the world.

The current state of the world — with its increasing temperatures, resource depletion, pollution, poverty and hunger — are a direct result of a traditional "take, make, use, waste" philosophy that failed to consider the long-term social and environmental problems caused by mass consumerism. As the global population has doubled since 1960, the adverse impacts caused by this mindset have increased exponentially.

The bad news? The global population, along with worldwide consumer spending, is only going to continue its fast-paced growth. According to a 2016 report by McKinsey & Company, 1.8 billion new consumers will emerge globally by 2025, which means a 75 percent increase over the consumer audience in 2010. Due to this growth, China alone is expected to double its spending on personal products — a major source of negative manufacturing impacts — by 2030. Worldwide consumer products spending is projected to grow at 5 percent annually for the next 20 years.

In response, a group of 190 countries have joined to endorse 17 sustainable development goals (SDGs) as part of a worldwide public-private initiative called 2030Vision. Achieving these goals, which include more affordable energy and climate action, will not only enable companies to fulfill their moral and ethical responsibilities — but can help them capture their share of an estimated $12 trillion in annual revenues and cost savings.

In order to seize this financial opportunity, and fulfill their environmental and social responsibilities, many companies have merged the roles of Chief Supply Chain Officer and Chief Sustainability Officer. Why? Because the end-to-end supply chain lies at the heart of sustainability. Not only do supply chain practices — from procurement to delivery — define a company's commitment to the environment and society, but they also determine ultimate financial failure and success. By marrying these two functions, companies can demonstrate enhanced value to customers and transform sustainable practices into a significant competitive advantage.

Traditionally, cost and service have been the overriding factors in deciding whether a given supply chain was operating optimally. As long as profits were high and customers were satisfied, a supply chain was considered successful — a model for other businesses to emulate. Now all that has changed. Sustainability is the new, and perhaps most critical, means of measuring a company's ultimate performance. Operating sustainably means that most companies must dramatically change their foundational supply chain practices. And they must do so quickly.

AI and the Smart, Sustainable Supply Chain

The good news? Just as awareness about global warming and climate change has grown, advanced supply chain technologies have emerged to help monitor and manage performance according to new key performance indicators (KPIs) and strategic priorities that are directly related to sustainability. Companies have never had so many digital resources to help them identify, track and control their environmental impacts across the end-to-end supply chain.

By gathering real-time data via the Internet of Things (IoT) and edge technologies — then applying sophisticated data science and analytics — companies can target sources of waste and inefficiency with a high degree of confidence. Then they can leverage cloud computing and targeted technology solutions to optimize performance and implement sustainable practices. They can take advantage of mobile devices, satellite-guided navigation and complex algorithms to make their end-to-end, network-based operations as efficient as possible.

Perhaps most exciting, organizations can now capitalize on artificial intelligence and autonomy to create a continuously more sustainable global supply chain. By training the supply chain to monitor and minimize its environmental and social impacts in real time, companies can make sustainability a basic tenet of their operations, every minute of every day. With total AI-enabled supply chain cost savings estimated by McKinsey to total $1.6 billion, the stakes are high — and companies need to take action to claim their share of these financial rewards.

As stated in a published report by Vision2030, "The capabilities of AI—including automating routine tasks, analyzing big data, and bringing intelligence and learning to various processes— expand our capacity to understand and solve complex, dynamic, and interconnected global challenges such as the SDGs."

Today's supply chains are global in nature, with complex wicked problems. Environmental and societal impacts can be both direct and indirect. Each participant in the supply chain has its own business requirements and behaviors. Defining practical, science-based targets is a complicated endeavor.

Making the right decisions in this complex environment is not only difficult, but today it is well beyond the scope of human cognition. AI-based tools can consider all the complex factors that come into play, gather and analyze relevant data, and make the most sustainable and profitable business decisions. Artificial intelligence is also capable of sensing a disruption across the network, deciding what it means for sustainability, and taking the right corrective action.

Four Keys to a Sustainable Supply Chain

While digitalization and the rise of AI have created a perfect storm of technological capabilities, many companies remain uncertain about how technology can help them embed the shared development goals into their business models — as well as define and advance their own sustainability KPIs.

JDA Software has identified four key ways in which digital technologies can support a sustainable end-to-end supply chain:

1. **Create a customer-centric supply chain that maximizes efficiency.** Digitalization has significantly improved companies' ability to monitor changing customer needs and align the end-to-end supply chain with those needs in real time. Via a shared technology platform and connected, proven solutions in areas like demand forecasting and S&OP, companies can now sense and react to customer changes immediately. As forecast downturns or emerging unmet needs are communicated across the entire network, manufacturing and transportation plans can be instantly adjusted as well — leading to less waste, less excess inventory and a minimal environmental impact. Leveraging advanced tools to design the supply chain for circularity and real-time responsiveness is a central tenet of sustainability.

2. **Support preventive resolution via real-time visibility.** Beyond recognizing and aligning with customer needs, real-time visibility across the supply chain delivers other sustainability benefits. In the event of any disruption — whether a weather event or a missed delivery — a response can be defined that takes social and environmental responsibility into consideration. As it gathers data and provides decision support, supply chain software can consider sustainability issues such as fuel consumption or CO2 emissions. For example, in the event of a materials shortage, alternative supply strategies can be evaluated in light of not only their cost and service implications, but their impact on natural resources. If a delivery truck breaks down, transportation planning software can define a corrective action with a low environmental impact. Adding sustainability to the mix has certainly added complexity to determining the best supply chain response, but today's software has the mathematical sophistication to manage this additional business challenge.

3. **Enhance collaboration across stakeholders in multi-tier networks.** Forming close digital connections internally, as well as with external collaborators, is critical to understanding and minimizing any organization's overall environmental impact. Sustainable supply chain decisions must take into account key considerations across the end-to-end supply chain. The social and environmental impact of external stakeholders — including suppliers, customers and trading partners — must also be assessed, including their ethical sourcing and child-free labor policies. Companies can also gain visibility into the everyday practices of their suppliers and choose to partner only with organizations aligned with 2030Vision priorities. Procurement and transportation software can add sustainability as a consideration when comparing potential suppliers. While today's global supply chains are complex, digitalization has made it easy to form connections and share critical data.

4. **Journey toward a connected, autonomous end-to-end supply chain that makes sustainable decisions automatically.** One way to promote environmental stewardship within any organization is by achieving a truly autonomous supply chain, in which disruptive events — including sustainability issues — are sensed and addressed in real time, without human intervention. But the true power of digitalization and AI lies in their ability to reach beyond the four walls of the business, to achieve network-based stewardship and shared sustainable decision making. The increasing accessibility of AI means that this vision is within the reach of every business. Not only does autonomy maximize speed and responsiveness in flagging issues and taking corrective actions, but it minimizes the human resources invested in supply chain monitoring and decision-making — at every node in the chain. In addition, autonomous end-to-end supply chains are aligned with customer needs at a degree of accuracy that simply can't be achieved via human cognition, minimizing waste and resource utilization at an unprecedented level.

Making your Supply Chain a Sustainability Champion

Many of the world's supply chains have acquired a less-than-ideal reputation for their environmental impacts. This is understandable, as historically companies have been disconnected from their upstream and downstream partners. And, as a significant number of companies have been challenged to survive in the face of increasing global competition and economic downturns, these organizations simply didn't have the resources to devote to understanding the complexities of environmental stewardship.

Today, all that has changed. Defining a sustainable top-level business strategy, and enacting it across the value chain, is still challenging — but powerful new technologies are available to help. Smart software solutions, connected on a shared platform, can now help transform the global supply chain into a tool for environmental stewardship. As these leading-edge solutions monitor and respond to changing conditions in real time, they can consider sustainability goals alongside more traditional profitability and service objectives.

As supply chain software increasingly connects all trading partners and leverages AI to support sustainable decision making across the supply chain, today every business can contribute to the goals of 2030Vision. Armed with connectivity, control, autonomy and a spirit of collaboration, today's globally complex, end-to-end supply chains can make the right decisions, to become true environmental and social champions.

SUPPLY CHAINs save the WORLD

jda.com info@jda.com

jda.