

How Bayer Crop Science grows logistics excellence via digitalisation

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Abstract

Like most companies, Bayer Crop Science is facing increasing volatility on both the supply and demand sides. Materials shortages, increasing costs, transportation roadblocks and demand fluctuations create constant challenges. And the seasonal nature of the company's business, which is based largely on regional growing seasons, leaves little room for error. Bayer Crop Science's global logistics team bears the brunt of continuing to deliver on customer promises, profitably, despite these constant exceptions to plan. To maximise service, resiliency, sustainability and financial results, Bayer Crop Science needed to optimise its global transportation and logistics processes. The company was seeking to increase visibility and responsiveness to disruptions, as well as establish standardised worldwide practices and shared value that would lead to more fact-based, profit- and service-driven decisions. This was impossible while 350 facilities, in more than 70 countries, were using disparate tools, outdated legacy systems and manual processes to manage a logistics network that had become incredibly complex. Several years ago, Bayer Crop Science embarked on a digital transformation

that establishes a common platform — Blue Yonder's transportation management and warehouse management solutions — as well as standardised processes and workflows, across the company's sprawling logistics footprint. While the transformation at Bayer Crop Science is still under way, transportation and warehousing operations in 64 countries have been digitalised. This paper describes some early results, including a 3–5 per cent reduction in overall transportation spend, a 7 per cent increase in asset utilisation, decreased environmental impacts and a cultural change that is making Bayer Crop Science employees both happier and more productive.

Keywords

logistics digitalisation, transportation management, warehouse management, digital transformation, supply chain volatility, artificial intelligence, machine learning, supply chain autonomy

COMPANY OVERVIEW

With annual revenues exceeding US\$23bn, Bayer Crop Science delivers agricultural solutions to customers in more than 70 countries spanning the world. The company's products — including crop protection, seeds and traits and digital farming tools — are aimed at transforming the future of farming and positioning customers for success in a rapidly evolving global agricultural industry. Bayer Crop Science invests billions of dollars in research and development (R&D) annually to help reduce agriculture's impact on the environment, increase food security and help farmers combat the impacts of climate change.

KEEPING UP WITH CHANGING SEASONS: A LOGISTICAL CHALLENGE

Like every company, Bayer Crop Science has experienced increasing volatility on both the supply side and demand side of its business in recent years. Materials shortages, transportation roadblocks and demand fluctuations have an impact on the company's ability to execute on its established plans and deliver the right product to the right place at exactly the right time.

This exact supply and demand match is made even harder to achieve given the seasonal nature of Bayer Crop Science's products. In the agricultural industry, regional growing seasons around the world place unique pressure on the supply chain. As just one example, Bayer's seed products can have a lead time of two to three years, followed by a distribution window of as little as six weeks once they arrive at the warehouse. Most customers need product solutions delivered at a specific point during their local growing season. No matter what kinds of variations are happening upstream or downstream, Bayer Crop Science must deliver its solutions on time, in full. The global food chain depends on its reliable performance.

Of course, it falls upon the logistics team at Bayer Crop Science to deliver on these critical customer promises, even when faced with practical problems such as materials and labour shortages, port closures, rising fuel costs, extreme weather and geopolitical conflicts that affect both suppliers and customers.

THE NEED FOR A GLOBAL DIGITAL TRANSFORMATION

Several years ago, Bayer Crop Science recognised that its 350 worldwide

warehouses, as well as its regional transportation fleets, were mastering upstream and downstream volatility with varying degrees of success, depending on the region.

While some facilities were guided by proven best practices and more advanced application of technology tools, most were trying to manage extreme complexity via manual processes and outdated legacy systems. Bayer Crop Science was challenged to establish consistent performance and process standardisation across its worldwide logistics function to increase agility, efficiency and resiliency. Consistent performance and process standardisation were two critical capabilities Bayer needed to optimally manage variability in its business, and drive certain results even in the midst of uncertainty.

Enormous data volumes, a sprawling global footprint and fast-changing conditions across the supply chain made it virtually impossible, however, for human analysts to establish common work processes across warehousing and transportation across more than 70 countries. Working with disparate systems, workflows and processes, and lacking shared analytics, it was difficult for Bayer Crop Science to benchmark its global warehousing and transportation performance, let alone standardise and optimise it.

While the challenge was a significant one, Bayer Crop Science recognised that there were powerful technology solutions, enabled by artificial intelligence (AI) and machine learning (ML), available to help. The company embarked on an ambitious digital transformation of its global logistics function that is not yet completed but is already beginning to deliver results and pay dividends.

IT TAKES A VILLAGE

One of Bayer Crop Science's key concepts for this enormous undertaking is the importance of partnership. This effort requires active participation and collaboration from thousands of worldwide logistics team members, from the shop floor to the executive suite. From the onset, Bayer made sure to communicate the need for the transformation and secure the buy-in of employees. While the transformation is aimed at improving customer centricity and service levels, Bayer Science recognises that it's employees who are responsible for delivering on customer promises. Employees truly represent that heart of the business.

In Bayer's view, it is impossible to understate the importance of employee ownership and involvement. Team members will always naturally cling to 'the way we have always done things', so it is essential to show them the need for change and communicate the expected benefits. At every stage, Bayer Crop Science ensured that associates had the education and training they needed to adopt new processes, technology solutions and ways of working.

This partnership approach also extends to selecting suppliers. After assessing the available solutions on the market, Bayer Crop Science chose to partner with Blue Yonder on the transformation. Not only do Blue Yonder's warehouse management and transportation management solutions represent proven, mature technologies, but Blue Yonder also has proven success in managing this type of large-scale global roll-out with other international businesses.

While the technology implementation has been led, at every stage, by the Bayer Crop Science team — and driven by

its practical business requirements — Blue Yonder works side-by-side with the Bayer team to ensure that the right features and functionality are delivered, and that Bayer Crop Science employees are able to fully leverage the software's capabilities.

THE PRACTICAL VALUE OF DIGITALISATION

What is the real value of digitising logistics? Today's logistics teams, including the team at Bayer Crop Science, face a nearly impossible challenge. On the one hand, they are being asked to deliver higher levels of speed, agility and responsiveness than ever, even when faced with extreme volatility. No matter how quickly or dramatically market needs change, they need to pivot and maintain the highest customer service level. But, on the other hand, they are required to minimise scarce resources, control costs and protect profit margins. Since warehousing and transportation are the largest cost centres in the entire supply chain, the stakes are incredibly high.

Logistics teams must make critical decisions on the fly, in real time, but they also need to consider thousands of data points and make sophisticated trade-offs regarding service and cost. Given the complexity of today's supply chains, and the fast-moving nature of the marketplace, human cognition and legacy systems simply are not up to this challenge. Backed by the power of AI, ML, predictive analytics and autonomy, digital solutions represent the only answer. Logistics teams can leverage these advanced solutions to recognise disruptions, both upstream and downstream, and execute an optimised, profitable resolution in near real time, bringing the entire supply chain immediately back on track.

In the transportation arena, a digital transportation management system (TMS) is capable of connecting the entire shipping network, including customers and carriers, in real time. As planning exceptions occur anywhere in the digital thread that connects transportation assets with upstream suppliers and downstream customers, they are visible and immediately actionable. Digital TMS solutions often execute a seamless, autonomous response to exceptions based on predefined objectives. For more complex planning and execution challenges, they bring the right data and the right decision makers together in a virtual situation room, where various resolutions are simulated and tested before being implemented.

No matter how frequently disruptions occur, digital TMS capabilities makes it seamless, fast and easy to orchestrate all the transportation function's complex moving parts, as well as aligning it with high-level service and cost targets. Digital transportation management solutions are purpose-built to support flexible, multi-mode delivery schemes, dynamic planning and re-planning, unified inbound and outbound logistics and carrier collaboration in near real time.

Digital solutions used for the logistics partners are engineered to recognise exceptions in the warehouse in near real time and deliver autonomous resolution for most events. Digitalisation also supports a granular, near real-time assessment of labour productivity and task completion. By monitoring warehouse operations continuously, companies such as Bayer Crop Science can strategically reassign resources as conditions change, as well as coach individual associates to maximise their contributions.

GLOBAL VISIBILITY: YOU CANNOT OPTIMISE WHAT YOU CANNOT SEE

With the TMS implementation, Bayer Crop Science recognised a clear, immediate benefit: global visibility, in near real time. Previously, regional operations were managed in a disconnected and disparate manner. While there were high-level performance metrics, it was hard to see which workflows and processes were most effective.

Today connected, digital solutions guide the optimisation of nearly every Bayer warehouse and transportation asset. From procurement and inbound logistics, through picking and packing, to load optimisation and carrier management, there are standardised ways of working, and near real-time visibility into the status of every order and every fulfilment task. Now Bayer Crop Science has a view of exactly what is happening across the worldwide logistics function, which means it can assess and optimise every aspect of performance.

In the warehouse, digital solutions help Bayer Crop Science monitor inventory and track its movements in near real time. Similarly, in the transportation function, near real-time track-and-trace capabilities helped Bayer make on-the-fly logistics decisions during the crucial last mile. The company can orchestrate its resources more efficiently because it has greater awareness of what is actually happening.

Just as important, the entire logistics function at Bayer Crop Science has a near real-time view of upstream exceptions such as a missed inbound delivery, and downstream disruptions such as blocked transportation lanes. Based on those insights, regional teams can identify alternative sources, adjust staffing levels in the warehouse, find new routes and otherwise

make adjustments to protect both customer relationships and profit margins.

INTELLIGENT DECISIONS, DRIVEN BY DATA AND AUTOMATION

Not only do the new digital solutions in warehousing and transportation provide transparency, but they also produce enormous volumes of near real-time data from across the global logistics function at Bayer Crop Science. AI-enabled optimisation engines ingest this data and use it to make critical decisions — often autonomously, with no human intervention. And ML capabilities allow these engines to improve continuously over time in their ability to make optimised decisions that balance cost and service levels.

For companies used to relying on manual analysis and human planners, it can be difficult to trust technology solutions to make critical decisions about mission-critical warehousing and transportation activities. But Bayer Crop Science stakeholders quickly gained confidence that the digital solutions are considering thousands of factors and accomplishing sophisticated analysis that exceeds the capabilities of human planners.

Digital TMS and WMS solutions also enable Bayer Crop Science to streamline, accelerate and automate many numerically intense activities that previously required a great deal of administrative time and attention. At the same time, digital capabilities have improved the quality and accuracy of decision making. As just one example, by digitising the carrier management process, Bayer has significantly reduced its freight costs while improving on-time delivery rates. Digital capabilities help Bayer conduct online bidding events, automate the bid

analysis and carrier award process and model complex transportation scenarios as conditions change.

These kinds of process improvements can be found throughout the logistics function. From determining warehouse picking routes to optimising lorry loading capacities, digital solutions are proving their ability to quickly solve even the most complex problems. Not only is Bayer Crop Science able to accomplish everyday logistics tasks with greater speed, efficiency and cost control, but it is also better equipped to identify and resolve any disruptions before they have a significant impact on logistics operations, no matter where in the supply chain these exceptions occur.

TRANSFORM AND PERFORM

Of course, no company undertakes a transformation without expecting to see tangible results. At Bayer Crop Science, the Blue Yonder TMS and WMS solutions are not just intended to change the way logistics team members work. They are expected to deliver significant performance improvements and bottom-line benefits. From the beginning, 'transform and perform' have been the two pillars of the change effort.

With the TMS and WMS solutions live in 64 countries, the complete worldwide implementation is still under way, but Bayer Crop Science is already seeing significant results. As the company optimises routes, minimises its use of expedited shipping and realises other improvements, the overall transportation spend has been reduced by 3–5 per cent.

Bayer has two main pillars for measuring its progress: operational efficiency and customer experience. Bayer has improved asset utilisation by 7 per cent by maximising lorry capacities,

combining shipments and achieving other efficiencies. Today lorry utilisation is around 95 per cent for full lorry loads. In terms of the customer experience, Bayer has improved its on-time delivery rate by 5–7 per cent.

Today Bayer can make smarter, more strategic decisions that deliver high levels of customer service, at a much lower cost-to-serve. Global transportation cost reductions are expected to continue as the company's tangible results grow over time.

Across the worldwide logistics function, the digital transformation has created a new focus on performance measurement and improvement. Advanced TMS and WMS solutions provide the always-on traceability and transparency to assess warehousing and transportation performance in near real time. Bayer Crop Science can see what is working optimally, as well as target areas for improvement. Employees can be trained, processes can be refined and even trading partners can be coached on how to improve their contributions.

Digitisation sets the stage for not only continuous improvement, but also fast adjustments when results are not as expected. At the centre of this concept is ongoing, continuous performance measurement; Blue Yonder TMS and WMS solutions provide the 24-7 data feedback needed to make that measurement easy.

IMPROVED SUSTAINABILITY: A NATURAL OUTCOME

Bayer Crop Science has defined a series of ambitious sustainability goals that it intends to achieve by 2030, including reducing the environmental footprint of both its products and its supply chain. The digital transformation of its warehousing and transportation activities

is expected to contribute significantly to meeting these targets — a natural outcome of optimising these resource-intensive logistics functions.

Efficient, digitised warehouses consume far less paper, electricity, water and other resources. Increased asset utilisation and carrier consolidation mean far fewer lorries on the road, as well as far fewer railcars and ocean shipments. Route optimisation helps minimise the overall environmental footprint of logistics.

A SURPRISING BENEFIT: POSITIVE CULTURAL CHANGE

There was one benefit of the Bayer Crop Science logistics transformation that greatly exceeded expectations: today warehousing and transportation employees are much happier doing their jobs.

It is always difficult to introduce big changes, and it is normal for employees to resist change. But Bayer Crop Science overcame this challenge by accompanying the technology change with a cultural transformation. The company made a proactive, concerted effort to communicate the reasons behind the change — greater process standardisation, greater visibility and greater efficiency — to the global logistics team. People knew they would have access to better WMS and TMS tools, more factual information and the strategic insights they needed to do their daily jobs more effectively.

Bayer Crop Science created a set of ‘super users’ who would learn the new systems, train others and serve as advocates and champions of change. Once people began to see the results they could expect from the new systems, such as less manual labour and less rework, they began to embrace the technology implementation, leading to a mindset change and a true digital culture.

Today Bayer Crop Science has a 95 per cent user adoption rate for its TMS and WMS solutions. Employees have an improved work-life balance and are happier, because digitalisation has made it much easier to do their jobs. In an era of labour shortages, these digital systems are a selling point in attracting and retaining warehousing and transportation employees. Bayer Crop Science is increasingly seen as a logistics leader in the countries where it operates, which provides an edge over other businesses competing for scarce talent.

AI and process automation have minimised the time and effort needed to accomplish common everyday tasks, easing the burden on warehousing and transportation associates. They can manage the entire, end-to-end logistics workflow seamlessly, using a single, user-friendly, intuitive interface. They can communicate and collaborate much more effectively because they are using the same platform. They are using state-of-the-art tools and systems, which is a point of pride and differentiation.

CULTIVATING EXCELLENCE VIA GLOBAL PROCESS STANDARDISATION

In a relatively short period of time, Bayer Crop Science’s logistic function has undergone a dramatic change. A set of isolated, fragmented legacy systems, which were not designed for the complexities of today’s world, has been replaced by a single, shared platform that is purpose-built to enable logistics excellence. Manual, time-consuming, error-prone processes have been replaced with speed, accuracy and automation.

Sixty-four countries are now live on Blue Yonder’s TMS and WMS solutions, which are managing a huge volume of

day-to-day work. As one example, today 95 per cent of Bayer's transportation payments are automated through the TMS with no manual intervention. Previously, this was an enormous centre of manual labour and a pain point for both Bayer Crop Science and its network of third-party logistics carriers. Now carriers are paid quickly and automatically, which has led to much stronger partner relationships.

Operations in 64 countries are now standardised based on a shared set of best practices and optimised workflows. Its partnership with Blue Yonder allows Bayer Crop Science to implement a single logistics platform — with shared data, metrics, workflows and best practices — across more than 350 locations worldwide, supporting the company's goal for global standardisation. As all logistics employees utilise common decision-making criteria and practices, as well as apply a shared set of values, they can act in the best interests of the company, and deliver outstanding customer service, profitably and sustainably.

LOOKING TO THE FUTURE: A PLATFORM FOR CONTINUOUS LOGISTICS IMPROVEMENT

Considering the positive results it has already achieved, it is not surprising that Bayer Crop Science intends to increase its investments in logistics digitalisation. A future goal is to bring all the Bayer Crop Science businesses into a single digital platform that leverages the robotic process automation (RPA) capability in Blue Yonder's TMS to redefine non-touch planning, as well as move from decentralised planning to a centralised approach that spans Bayer Crop Science's global operations.

Volatility on both the supply and demand sides is only going to increase, making it desirable for Bayer Crop Science to continue increasing its logistics speed, automation, agility and responsiveness. By incorporating even more digital components, including robotics, Bayer Crop Science is laying the foundation for future logistics leadership — no matter what surprises the future has in store.