Modernizing supply chain management with artificial intelligence

The 451 Take

The retail and consumer products (RCP) sector is keen on artificial intelligence (AI). According to 451 Research's Voice of the Enterprise: AI and Machine Learning, Adoption and Use Cases 2019 survey, 28% of RCP companies have already adopted the technology and a further 34% plan to do so within a year. These companies recognize that machine learning can bring substantial value to numerous processes in a tight-margin industry.

Supply and demand management is one area of interest, particularly for the most tech-savvy organizations. As the figure below shows, 55% of technology leaders in the RCP sector use machine learning to improve their supply and demand prediction processes, compared to 37% of 'learners' and 4% of 'laggards.'

RCP Company Adoption of Machine learning for Supply and Demand Predictions

Source: 451 Research's Voice of the Enterprise: AI and Machine Learning, Adoption and Use Cases 2019

Q: Focusing on your specific industry, which of the following best describes your organization's industry-specific machine learning use case(s)? Please select all that apply.

37%	55%	37%	4%
Total (n = 108)	**Leaders** (n = 42)	**Learners** (n = 21)	**Laggards** (n = 21)
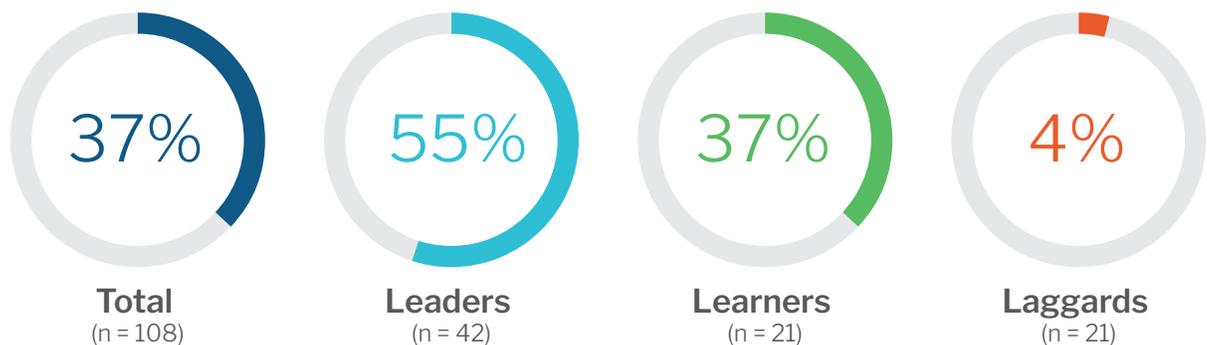
Why are the most forward-looking RCP companies implementing this technology into their supply chain workflows? Because they want to derive value from the sheer amount of data contained within their legacy supply chain management systems. Traditional supply chain management systems built with enterprise resource planning (ERP) software are rules-based, and this relatively low-level decision-making is simply not advanced enough to glean insight into complicated supply chain data at scale.

One problem is the volume of alerts associated with inventory shortages and overages. Results returned by 'if-then' statements lack crucial context, leaving users with a surfeit of warnings and no means to prioritize them. Machine-learning-backed systems integrate and analyze more data sources than a rules-based system – let alone a human – could manage, so can surface intelligent results. Users are, therefore, better equipped to identify and evaluate risk, and they can begin to work more proactively, allowing organizations to respond more quickly to challenges and opportunities, provide faster and better customer experiences, increase revenue and decrease costs.

Business Impact

PREVIOUSLY INERT DATA STORES ARE ACTIONABLE. Almost every RCP company has an ERP system, but not enough of them are tapping into its full value because transactional data confined within this legacy software is under-analyzed or goes unanalyzed altogether. Finding the value in existing assets is critical to any digital transformation effort. Machine learning can help unleash insight from the massive amounts of data held within these systems of record, transforming them into systems of intelligence.

SURFACING PERTINENT INSIGHTS IS FRICTIONLESS. Every organization strives to make data-driven decisions, but this objective is often hindered by technological obstacles. Bringing a machine learning application into supply chain systems is a practical means of overcoming these limitations. The technology makes data analysis both bigger and smaller: not only does it integrate more data points into the analysis, but the technology also can better pinpoint trends or identify relationships in the data.

TOOLS UPGRADE EXISTING SYSTEMS. Adding a machine learning layer atop extant business software is a straightforward and effective means of implementing digital transformation. Dramatic results are possible without the drama of a wholesale replacement of legacy technology. The win-win makes this method an easy sell for executives looking to add value in an efficient and effective way.

Looking Ahead

The automation and optimization provided by machine learning has the potential to add significant value in the RCP sector, and adoptees must be cognizant of common barriers to implementation to ensure maximum value from their investments in this technology. For example, in the case of a modern supply chain application, it's important to select a tool compatible with current business software, be it ERP or business intelligence systems. Limited interoperability will diminish value by reducing the breadth and depth of analytical insight. And given that skills can be a barrier to adoption, organizations should – where available – choose applications that overcome these barriers by fitting in with current workflows and skill levels.

In addition to high-level applications focused on product allocation within the supply chain, machine learning will pervade other applications in the RCP sector, especially those upstream of inventory management. For example, applying the technology to the production process itself could yield advantages. Image recognition systems could be used to monitor the supply chain for production defects, or production sensor data could be analyzed by machine learning algorithms to improve uptime and capacity utilization. RCP companies could even use the technology to improve their procurement processes by expediting manual processes such as contracting or by bringing more intelligence to decision-making around ordering or supplier selection.

Machine learning and AI are set to become ubiquitous features of modern retail and consumer products companies, and early adopters are already applying the technology to their supply chain processes. Any RCP company whose strategic plans don't include the technology risk ceding business to those that embrace the technology.

Legacy rules-based software systems are poorly equipped to handle system-wide volatility across modern supply chains, propagating ambiguity around demand and supply risks, and leaving planners with endless alerts and no means to prioritize them. Noodle.ai's Enterprise AI® applications provide predictive clarity into supply chain volatility, defining value at risk on both the supply and demand side, and empowering planners with prescriptive recommendations that enable smart actions instead of best-guess reactions.

The results are transformational: increased organizational risk awareness, the recovery of millions of dollars in lost sales, and reduced waste across the supply chain.