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## WHAT IS MACHINE LEARNING?

Machine learning is a type of supervised or unsupervised artificial intelligence where software has the ability to learn without being explicitly programmed.

The adoption of machine learning is in full swing. For more than a decade, companies have used the power of machine learning to improve supply chain planning efficiencies and develop optimized supply chain

decisions. Automatic model switching to improve forecast accuracy is just one of many examples of the early use of machine learning to continually tune the digital supply chain and optimally leverage physical supply chain network performance.

Early results are driving the hype of machine learning applications to a fever pitch and there's no question that machine learning is a topic that supply chain practitioners should be actively investigating. The real question is, "Are we, as a profession, ready to embrace machine learning in an unsupervised fashion"? If so, what does that mean and how do we get there?



Growth in Machine Learning Market (Constellation Research, Inc., October 2017)

International Data Corporation (IDC) forecasts spending on artificial intelligence (AI) and machine learning will grow from \$88 in 2016 to \$47B in 2020.



"CEOs expect supply chain leaders to prepare for DIGITAL BUSINESS and want to know how they intend to DEVELOP CAPABILITIES and use advanced technologies like artificial intelligence to create a flexible, agile and RESPONSIVE DIGITAL SUPPLY CHAIN."



## THE RELATIONSHIP BETWEEN MACHINE LEARNING AND BIG DATA

Terms like advanced analytics, algorithmic optimization, artificial intelligence and deep learning are often used interchangeably with machine learning. These terms are not the same, and it's worthwhile to explain the differences:



#### Deep Learning

Algorithms that train themselves to perform tasks like speech, image and pattern recognition



#### Machine Learning

Statistical techniques that enable machines to learn and improve with experience



#### Artificial Intelligence

Techniques that mimic human intelligence, using logic, if-then rules, and decision trees



#### Algorithmic Optimization

Programs that systematically adjust variables to determine the best solution to a complex problem



#### Advanced Analytics

The examination of data through the use of mathematics, statistics and computer software to measure performance or evaluate multiple scenarios

## BUILDING THE TEAM TO SUPPORT MACHINE LEARNING

The right culture, organizational structure and skillsets are essential to realizing the benefits of machine learning.



**Executive Support:** With both the organizational power and vision for machine learning capabilities.



**Machine Learning Champion:** With a diverse set of skills including communication and influence to build support for machine learning, across an organization.



**Supply Chain/Business Analysts:** Understand business needs, assess the impact of changes, determine the appropriate response and communicate recommendations.



Data Scientists: Gather, analyze and interpret complex data used in business decision-making.



**Artificial Intelligence Specialists:** Work on systems that gather information and formulate recommendations that automatically act.

## BUILDING THE MACHINE LEARNING PLATFORM

Does your supply chain platform support your plans to harness machine learning capabilities? Here are a few capabilities that your supply chain planning platform needs:

- Process Automation to free up resources to focus on higher value-added activities
- Advanced Visualization for support of all analysis requirements
- Support for All Levels of Analytic Maturity from descriptive through cognitive
- In-Memory Processing for robust analysis and fast response times
- Cloud-Based for fast deployment and flexible scalability
- Configurable User Interface for cross-functional analysis requirements
- Mobile Device Support for 24x7 access to supply chain operations
- Master Data Management (MDM) for consistent, harmonized and managed data across your complete supply chain



## JUSTIFYING THE INVESTMENT IN MACHINE LEARNING

Determining the return on investment (ROI) from leveraging machine learning comes from a number of areas of opportunity:

**Automation:** Automate manual data efforts and processes leaving more time for analysts to work on valueadding activities. Improving supply chain team efficiency is key in today's tight labor market.

**Better Decisions:** Uncover golden nuggets of information that can lead to business breakthroughs.

**Risk Mitigation:** Detect problems earlier and provide a competitive advantage by proactively addressing potential disruptions.

**Improved Forecast Accuracy:** Understand and improve 'Customer Sentiment,' leading to increased demand and vice versa.

**New Product/Service Development:** Leverage new data sources to analyze phrases and market sentiment to develop more successful new products and services that provide stronger sales and higher profits.

**Stay Competitive:** Your competition is likely investing in machine learning. Can you afford to let them gain an advantage?

## ACTIVITIES WHERE PEOPLE WILL BE REPLACED vs AUGMENTED

What impact will technology and automation have on the individual worker in the following supply chain activities by 2025?

Augment human activity

No change

Executing transactions (e.g., placing purchase orders)

Exchanging data/information with external partners

Monitoring the performance of capital equipment and/or connected products

Picking and packing orders

Monitoring the performance of external partners

Manufacturing operations

Market Intelligence and forecasting

Customer service (e.g., handling inquiries)

Scenario planning and modeling

Reviewing contracts and terms

Decision making (e.g., analyzing data for insights)

Developing supply chain strategy



## GETTING STARTED WITH MACHINE LEARNING

#### Where should you start?

**Learn** what has worked for other companies.



**Understand** where machine learning could make a big impact within your company.

Start now and measure results.



**Build experience** and continue to explore new areas where machine learning can add value.

## Where to start with your supply chain:

**Forecasting:** Forecast accuracy is a top challenge for many companies and a quick win application of machine learning could be the automated adoption of "Best-Fit" algorithms across your portfolio.

Supply Chain Optimization: Another high value opportunity of machine learning is gained by continually analyzing the state of your digital supply chain and automatically tuning planning parameters to meet customer requirements while maximizing company objectives.

#### Multi-Echelon Inventory Optimization (MEIO): Using

the latest demand and supply information, machine learning can enable a continuous improvement in your company's ability to meet a desired customer service level at the lowest inventory investment.

## CONCLUSION

#### The Key to Machine Learning – Start Now!

The introduction of machine learning into most supply chain organizations can propel your business into the future—harnessing automation, evaluating multiple scenario outcomes and boosting your confidence in decision-making. Laying a strong foundation of people, process, data and solutions, and taking advantage of industry-leading supply chain optimization technologies, can build your expertise and accelerate your move up the machine learning maturity curve.

## ADDITIONAL RESOURCES



Three Checklists to build a Successful Supply Chain Analytics Foundation White Paper



Eight Methods to Improve Forecast Accuracy in 2019 White Paper



The Advanced Inventory Optimization Handbook eBook

#### ABOUT LOGILITY

Accelerating the digital supply chain from product concept to customer delivery, Logility helps companies seize new opportunities, sense and respond to changing market dynamics and more profitably manage their complex global businesses. The Logility Voyager Solutions<sup>™</sup> SaaSbased platform leverages an innovative blend of artificial intelligence (AI) and advanced analytics to automate planning, accelerate cycle times, increase precision, improve operating performance, break down business silos and deliver greater visibility.

To learn how Logility can help you make smarter decisions faster, visit www.logility.com.

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