

2017 North American Supply Chain Management for Retail & Wholesale Technology Leadership Award



2017 practices

NORTH AMERICAN BROADBAND COMPANY OF THE YEAR AWARD

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Background and Company Performance

Industry Challenges

With an increasing of level of connectivity among people and machines, exponential growth in data has occurred. Managing the data and its complexity, making sense of it and translating it into reality is challenging. Traditionally, statistical methods do a good job of explaining the specific trends and the seasonality or stable demand that is easier to understand. Many companies have made significant progress in this area.

However, digital transformation through Internet of Things (IoT), Big Data, and cloud computing is also changing customer needs and expectations, including wholesale distribution and retailers. There are many elements that are difficult to incorporate in traditional forecasting. These elements could be the impact of a promotion (is it the same as the previous one, how is it affecting demand), social sensing (monitoring social channels to predict demand), new product launches and how they translate into sales potential, the effects of a competitor participating in an event and resulting impact on demand, and external data and macroeconomic indicators that might be changing.

As much as 30% of revenue is attached to factors listed above, which, previously, were not as frequent. Therefore, it is challenging to understand that these factors are early signals indicating product demand. Machine learning helps understand these factors that might otherwise be deemed insignificant.

Supply chain vendors that can address the aforementioned challenges and embed machine learning applications into their solutions and improve demand forecasting and supply chain planning outcomes are expected to secure leadership positions in the market.

Technology Leverage and Business Impact

Commitment to Innovation

Strongly committed to maximizing its value proposition for its customers, ToolsGroup's focus and mission have been consistent in 3 different areas, predictive commerce (end-toend single probabilistic model, zero latency, and high automation with higher planner productivity), improved demand planning by leveraging data (order-line data, channel and POS data, and marketing data), and advanced demand analytics (machine learning for improved forecasting). ToolsGroup's commitment to technology innovation in supply chain planning and demand analytics is exceptional and is demonstrated by its continued focus to take the view of traditional forecasting development to the next level.

The company has always remained ahead of its competitors when it comes to technology innovation. While most companies are still dealing with a traditional, single-numbered, top-down approach of forecasting (at the aggregated level), ToolsGroup, over 10 years ago, moved to a highly automated, statistical, bottom-up approach; incorporating order

lines and order frequencies that yielded better results for its customers. The company has helped a majority of its customers transition to level-3 forecasting "outside in" by using demand sensing to translate channel demand into the forecast and supply chain. More than 7 years ago (very early by industry standards), ToolsGroup looked at the next level of data that needed to be leveraged—marketing data, Web data, and point-of-sale data.

However, due to the level of connectivity among people and machines, exponential growth has occurred in relation to dirty data, incomplete data, constantly changing data, and data that is sheer volume. Understanding such growing industry concerns, ToolsGroup leveraged its dexterity with in-depth understanding of machine learning technology to offer customers a breakthrough, innovative, machine learning engine (MLE) that offers complete functionality and infinitely scalable applications to improve data analysis. The engine learns from existing data and accurately identifies future demand trends. The MLE is embedded within ToolsGroup's solution that runs across critical supply chain planning areas such as demand forecasting and demand collaboration, sales and operations planning (S&OP), demand sensing, promotion forecasting, and multi-echelon inventory optimization (MEIO).

Being the first to embrace machine learning has given ToolsGroup a significant head start. For instance, ToolsGroup's MLE is already touching cloud and real time data. The company is committed to being the best at leveraging this data with machine learning and this translates into added visibility to its customers (a visibility it might not have had before), better accuracy, better inventory optimization and cost reduction, and better replenishment and with a highly autonomous system, a 2X or more increase in productivity.

Demand forecasting and supply chain planning processes are governed by a large number of variables such as external data (weather or macroeconomic data); however, the continuous self-learning nature of ToolsGroup's machine learning overcomes such odds and improves the reliability of complex forecasting. Trade promotions and complex seasonality are two successful, existing machine learning supply chain planning applications. The company has now evolved and remained true to the core mission of improving demand forecasting and supply chain planning outcomes by creatively adding in new machine learning applications, such as social sensing, new product introduction (NPI), and external data to its SO99+ supply chain planning platform.

Commitment to Creativity

ToolsGroup's new Web-based **social listening/social sensing** system "Groover" listens to social channels and gauges consumer sentiment. It not only monitors and archives live data streams/tweets on specific brands, but also incorporates such social media data into demand forecasting. Groover is redefining current business intelligence and planning solutions by enabling a new level of decision support, by sharpening the demand signal, and by enhancing supply chain planning and demand sensing. These new data sources can

also be used as early indicators to enhance forecasting models and improve forecast accuracy during new product introduction and trade promotion forecasting.

It is difficult to accurately forecast the demand for a **new product** using traditional forecasting techniques where early indicators (Web page visits, social media) cannot be accounted for. This is strikingly different in the case of ToolsGroup's solutions because its machine learning (embedded within ToolsGroup's demand planning software) NPI application predicts the potential performance of a new product by analyzing early indicators (Web page visits, social media), as well as using the early signals from Web analytics and understanding product attributes and market characteristics. ToolsGroup's NPI machine learning application not only enables better forecasting, but also generates revenue and growth by addressing demand complexities during the launch period. This enables ToolsGroup's customers to effectively improve their company's performance by helping them achieve their sales revenue, especially during the initial months of the product launch.

Improving forecast demand based on **external events and data**, such as weather or macroeconomic data, can be very complex and challenging. Statistical modeling can be difficult due to the high volume of data and the number of variables involved depending on factors such as geographic areas and products. In an effort to address this, ToolsGroup's external data machine learning application (using advanced algorithms such as "deep learning" that allow its models to learn from existing data and accurately identify future demand trends) crunches large amounts of data without having to make a lot of statistical assumptions for the different types of demand. The user experience is simple because the user only has to input the data—the machine understands the demand depending on the product and area.

For **promotion and media event forecasting**, ToolsGroup's powerful machine learning technology, coupled with deep learning algorithm, considers a variety of attributes (product, market, and social activity) to not only identify the characteristics of a promotional event, but also its effect on normal sales. Fast, multi-dimensional modeling helps to predict the non-linear demand driven by promotional activity.

Customer Acquisition

With changing industry dynamics, ToolsGroup, using its MLE, has significantly scaled up its retail offering.

Forecasting demand and positioning inventory has become difficult for retailers in a multichannel environment. However ToolsGroup's advanced demand analytics enables retailers to get a unified demand signal that helps to address demand volatility. The volume of actionable insights available to retailers using ToolsGroup's solution provides them with greater supply chain visibility, increased shelf fill rates, reduced lost sales at point of sale, and reduced global inventory.

ToolsGroup's focus has been on understanding the specific pieces of demand analytics with machine learning and how to make it operational, scalable, and translatable into inventory and replenishment. ToolsGroup's single integrated system helps retailers synchronize demand and supply. The system regulates forecasts with demand sensing, and it replenishes inventory by proposing new orders and allocations from suppliers. For instance, ToolsGroup developed a unique live auto replenishment system for Costa Coffee. As a result, Costa Coffee is now managing 6,500 points of sale with one demand planner, proving how highly automated ToolsGroup's software is. By running this fully automated supply chain, the company now has a full understanding of all 6,500 machines every 15 minutes and can seamlessly monitor demand, inventory, and replenishment. This IoT implementation involves almost zero human intervention.

Some of the other leading wholesale distribution and retailers that have reaped benefits by deploying ToolsGroup's solution are Candyking, SABECO, RS Components, Wiggle, IKEA and Wayfair. Boasting a nearly 100% customer maintenance renewal rate, and a robust (and continuously expanding) customer base of 300 customers, ToolsGroup is expected to further strengthen its position.

Application Diversity

ToolsGroup's advanced demand analytics can be used to improve data analysis across many industry verticals. The company has been highly successful in promoting technology leadership in retail and wholesale, drawing the attention of leaders from a wide range of other industries. Its customers hail from diverse backgrounds, such as companies from the aftermarket and service parts, consumer goods, fashion and apparel, food and beverage, healthcare, pharmaceutical, industrial, durables, specialty chemicals, and MRO. Operating across such a diverse range of industry verticals, ToolsGroup has prominent leaders among its customers, such as O2, Lennox, Aston Martin, Luxottica, Energizer, Mitsubishi, SKF, British American Tobacco, Volkswagen, and Carlsberg.

ToolsGroup's highly autonomous, self-learning supply chain planning and demand analytics software enables customers from various application areas to address demand volatility by generating accurate forecasts. For instance, Lennox Residential has experienced 99.7% automated supply chain planning. For every 1,000 supply chain decisions that are made in inventory, forecasting, and replenishment, only 3 out of the 1,000 are managed by a planner and the rest are managed automatically by ToolsGroup's software.

This results in improved customer service levels with less global inventory. After the ToolsGroup's system was introduced, Lennox improved service levels and reduced inventory in the 15% range, reduced distribution costs by 15%, and increased next-day delivery from 35% to 98%. The heightened satisfaction that ToolsGroup renders to its customers across application areas boosts its growth potential.

Growth Potential

ToolsGroup's business growth is clearly accelerating and the company has had several years of solid 20% to 25% organic revenue growth. In 2016, ToolsGroup had a 52% increase in bookings (orders taken in 2016) and its best Q1 start ever in 2017. It has been registering continued profitability and cash accumulation for the last eight years. ToolsGroup is well positioned to grow globally with its strong distribution and selling channels that have implemented software at customers in in 44 countries.

Conclusion

ToolsGroup's active interest in artificial intelligence (AI) has helped it to stay abreast with the latest trends and incorporate additional, powerful machine learning applications and functionalities, so that its supply chain planning platform is on par with industry requirements and technological advancements. ToolsGroup effectively matches its capabilities to the industry needs through a unique combination of machine learning applications that incorporate social sensing, weather, and enhanced new product introduction forecasting. The combination of cutting-edge machine learning algorithms, such as deep learning, and inputs from numerous data sources in the MLE results in a highly accurate forecast that aids customers manage faster response times, more customer understanding, and improved services. With its strong overall performance, ToolsGroup has earned Frost & Sullivan's 2017 Technology Leadership Award.

Significance of Technology Leadership

Technology-rich companies with strong commercialization strategies benefit from the increased demand for high-quality, technologically-innovative products. Those products help shape the brand, leading to a strong, differentiated market position.



Understanding Technology Leadership

Technology Leadership recognizes companies that lead the development and successful introduction of high-tech solutions to customers' most pressing needs, altering the industry or business landscape in the process. These companies shape the future of technology and its uses. Ultimately, success is measured by the degree to which a technology is leveraged and the impact that technology has on growing the business.

Key Benchmarking Criteria

For the Technology Leadership Award, Frost & Sullivan analysts independently evaluated two key factors—Technology Leverage and Business Impact—according to the criteria identified below.

Technology Leverage

- Criterion 1: Commitment to Innovation Criterion 2: Commitment to Creativity Criterion 3: Technology Incubation Criterion 4: Commercialization Success
- Criterion 5: Application Diversity

Business Impact

- Criterion 1: Financial Performance Criterion 2: Customer Acquisition Criterion 3: Operational Efficiency Criterion 4: Growth Potential
- Criterion 5: Human Capital

Best Practices Award Analysis for ToolsGroup

Decision Support Scorecard

To support its evaluation of best practices across multiple business performance categories, Frost & Sullivan employs a customized Decision Support Scorecard. This tool allows our research and consulting teams to objectively analyze performance, according to the key benchmarking criteria listed in the previous section, and to assign ratings on that basis. The tool follows a 10-point scale that allows for nuances in performance evaluation. Ratings guidelines are illustrated below.

RATINGS GUIDELINES



The Decision Support Scorecard is organized by Technology Leverage and Business Impact (i.e., These are the overarching categories for all 10 benchmarking criteria; the definitions for each criterion are provided beneath the scorecard.). The research team confirms the veracity of this weighted scorecard through sensitivity analysis, which confirms that small changes to the ratings for a specific criterion do not lead to a significant change in the overall relative rankings of the companies. The results of this analysis are shown below. To remain unbiased and to protect the interests of all organizations reviewed, we have chosen to refer to the other key participants as Competitor 2 and Competitor 3.

Measurement of $1-10$ ($1 = poor; 10 = excellent$)			
Technology Leadership	Technology Leverage	Business Impact	Average Rating
ToolsGroup	9.5	9.5	9.5
Competitor 2	8.0	8.0	8.0
Competitor 3	7.0	7.0	7.0

Technology Leverage

Criterion 1: Commitment to Innovation

Requirement: Conscious, ongoing development of an organization's culture that supports the pursuit of groundbreaking ideas through the leverage of technology

Criterion 2: Commitment to Creativity

Requirement: Employees rewarded for pushing the limits of form and function, by integrating the latest technologies to enhance products

Criterion 3: Technology Incubation

Requirement: A structured process with adequate investment to incubate new technologies developed internally or through strategic partnerships

Criterion 4: Commercialization Success

Requirement: A proven track record of successfully commercializing new technologies, by enabling new products and/or through licensing strategies

Criterion 5: Application Diversity

Requirement: The development of technologies that serve multiple products, multiple applications, and multiple user environments

Business Impact

Criterion 1: Financial Performance

Requirement: Overall financial performance is strong in terms of revenues, revenue growth, operating margin, and other key financial metrics.

Criterion 2: Customer Acquisition

Requirement: Overall technology strength enables acquisition of new customers, even as it enhances retention of current customers.

Criterion 3: Operational Efficiency

Requirement: Staff is able to perform assigned tasks productively, quickly, and to a highquality standard.

Criterion 4: Growth Potential

Requirements: Technology focus strengthens brand, reinforces customer loyalty, and enhances growth potential.

Criterion 5: Human Capital

Requirement: Company culture is characterized by a strong commitment to customer impact through technology leverage, which in turn enhances employee morale and retention,

Decision Support Matrix

Once all companies have been evaluated according to the Decision Support Scorecard, analysts then position the candidates on the matrix shown below, enabling them to visualize which companies are truly breakthrough and which ones are not yet operating at best-in-class levels.



Best Practices Recognition: 10 Steps to Researching, Identifying, and Recognizing Best Practices

Frost & Sullivan Awards follow a 10-step process to evaluate Award candidates and assess their fit with select best practice criteria. The reputation and integrity of the Awards are based on close adherence to this process.

	STEP	OBJECTIVE	KEY ACTIVITIES	OUTPUT
1	Monitor, target, and screen	Identify Award recipient candidates from around the globe	Conduct in-depth industry researchIdentify emerging sectorsScan multiple geographies	Pipeline of candidates who potentially meet all best- practice criteria
2	Perform 360-degree research	Perform comprehensive, 360-degree research on all candidates in the pipeline	 Interview thought leaders and industry practitioners Assess candidates' fit with best-practice criteria Rank all candidates 	Matrix positioning of all candidates' performance relative to one another
3	Invite thought leadership in best practices	Perform in-depth examination of all candidates	 Confirm best-practice criteria Examine eligibility of all candidates Identify any information gaps 	Detailed profiles of all ranked candidates
4	Initiate research director review	Conduct an unbiased evaluation of all candidate profiles	 Brainstorm ranking options Invite multiple perspectives on candidates' performance Update candidate profiles 	Final prioritization of all eligible candidates and companion best-practice positioning paper
5	Assemble panel of industry experts	Present findings to an expert panel of industry thought leaders	 Share findings Strengthen cases for candidate eligibility Prioritize candidates 	Refined list of prioritized Award candidates
6	Conduct global industry review	Build consensus on Award candidates' eligibility	 Hold global team meeting to review all candidates Pressure-test fit with criteria Confirm inclusion of all eligible candidates 	Final list of eligible Award candidates, representing success stories worldwide
7	Perform quality check	Develop official Award consideration materials	 Perform final performance benchmarking activities Write nominations Perform quality review 	High-quality, accurate, and creative presentation of nominees' successes
8	Reconnect with panel of industry experts	Finalize the selection of the best-practice Award recipient	 Review analysis with panel Build consensus Select recipient	Decision on which company performs best against all best-practice criteria
9	Communicate recognition	Inform Award recipient of Award recognition	 Present Award to the CEO Inspire the organization for continued success Celebrate the recipient's performance 	Announcement of Award and plan for how recipient can use the Award to enhance the brand
10	Take strategic action	Upon licensing, company is able to share Award news with stakeholders and customers	 Coordinate media outreach Design a marketing plan Assess Award's role in future strategic planning 	Widespread awareness of recipient's Award status among investors, media personnel, and employees

The Intersection between 360-Degree Research and Best Practices Awards

Research Methodology

Frost & Sullivan's 360-degree research methodology represents the analytical rigor of our research process. It offers a 360-degree-view of industry challenges, trends, and issues by integrating all 7 of Frost & Sullivan's research methodologies. Тоо oftencompanies important make growth decisions based on a narrow understanding their environment, of leading to errors of both omission and commission. Successful growth strategies are founded on a thorough understanding of market, technical, economic, financial, customer, best practices, and demographic analyses. The integration of these research disciplines into the 360-degree research methodology provides evaluation an platform for benchmarking industrv



players and for identifying those performing at best-in-class levels.

About Frost & Sullivan

Frost & Sullivan, the Growth Partnership Company, enables clients to accelerate growth and achieve best-in-class positions in growth, innovation and leadership. The company's Growth Partnership Service provides the CEO and the CEO's Growth Team with disciplined research and best practice models to drive the generation, evaluation and implementation of powerful growth strategies. Frost & Sullivan leverages more than 50 years of experience in partnering with Global 1000 companies, emerging businesses, and the investment community from 45 offices on six continents. To join our Growth Partnership, please visit <u>http://www.frost.com</u>.