2020
Supply Chains to Admire

A Nine-Year View of Progress
on Supply Chain Excellence

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Supply Chain Insights™

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Retail (3)	DOLLAR TREE	TJX	Ahold	
Process (5)	Reckitt Benckiser	L'ORÉAL	MONSTER BEVERAGE CORPORATION	abbvie	ECOLAB
Discrete (14)	tsmc	LOCKHEED MARTIN	BROADCOM	ut	SAMSUNG

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EXECUTIVE SUMMARY

Supply Chain Insights LLC

Business leaders are action-oriented and competitive. Executive teams strive to drive significant improvement in supply chain results; yet, only four percent of public companies succeed.

The Supply Chains to Admire™ evaluates the progress of public companies in the longest-ever economic expansion. The methodology includes over seven-hundred public companies within twenty-seven industry sectors.

There are many goals:

1. Guide supply chain leaders in setting realistic supply chain goals.
2. Provide industry benchmarks by industry peer groups.
3. Reward companies that are achieving higher levels of supply chain excellence.
4. Give a clear definition of supply chain excellence for the Supply Chain Insights research. The analysis enables an explicit objective function to better understand the impact of choices made by companies on balance sheet performance.
5. Gain an understanding of what is possible in multi-year roadmaps.

In 2020, twenty-two companies meet the criteria to be a Supply Chains to Admire Award Winners. The list of winners includes AbbVie Inc., Assa Abloy AB, BorgWarner Inc., Broadcom, Dollar Tree Stores, Ecolab Inc., iRobot Corporation, Lockheed Martin Corporation, Koninklijke Ahold N.V. (Ahold), L'Oréal S.A, Monster Beverage Company, PACCAR Inc, Reckitt Benckiser Group plc, ResMed, Rockwell Automation, Samsung, Sleep Number, Taiwan Semiconductor Manufacturing (TSMC) Company, The Toro Company, TJX Companies, United Tractors, and V.F. Corporation.

While the companies of Becton, Dickinson and Company (B.D.), Schneider Electric, and Urban Outfitters did not qualify as sector winners, the performance of these three companies shows marked improvement and notable achievement; and as a result, is worth a mention.

The list of Supply Chains to Admire Award Winners is a stark difference from the perception of industry leaders. While the performance of some companies like L'Oreal and Samsung are commonly accepted supply chain leaders, the performance and recognition of other companies on the list are not as well known. Since the Supply Chains to Admire is

FIGURE 1. Supply Chains to Admire Winners for 2020

HAVING THE RIGHT STUFF

Supply chain excellence is more comfortable to say than to explain. The Supply Chains to Admire methodology identifies companies within industry peer groups that drove higher levels of improvement, better performance, and a superior level of value in public markets during the 2010-2019 time period. The analysis tracks year-over-year progress on the metrics: growth, operating margin, inventory turns, and return on invested capital.

While the companies, over the seven years of the analysis, vary by year, the win rate remains constant at four percent. The path to excellence takes four-to-five years, and the most critical factor is leadership. In our research, we find no correlation to technology or consultant selection. Leaders drive higher levels of improvement by focusing on cross-functional process development and organizational alignment.
Historically, the focus has been on building efficient processes for sell, deliver, make, and sourcing organizations. From our research, it is clear that efficient organizational silos do not deliver superior balance sheet performance.

Supply chain leaders will quickly find that it is easier to drive improvement than sustaining performance. Progress requires patience and building capabilities based on a multi-year roadmap. Within a company, there are many barriers. A focus on functional excellence is a barrier to improving balance sheet improvement. A worst-case scenario is defining the supply chain as another function within a set of silos. The creation of the supply chain as a function is a more significant issue in Europe than in the Americas.

Driving Progress by Conquering The Effective Frontier
The supply chain is a complex, nonlinear system. In 2012, Supply Chain Insights worked with Arizona State University to determine the most appropriate group of metrics to correlate to Market Capitalization. Based on the correlation of data from over 150 metrics for the period of 2006-2012

for more than five hundred companies, we selected the parameters of growth, operating margin, inventory turns, and Return on Invested Capital (ROIC) for the balanced scorecard analysis. We call this balanced scorecard, as shown in Figure 2, the Effective Frontier.

FIGURE 2.The Approach: Balanced Scorecard Analysis
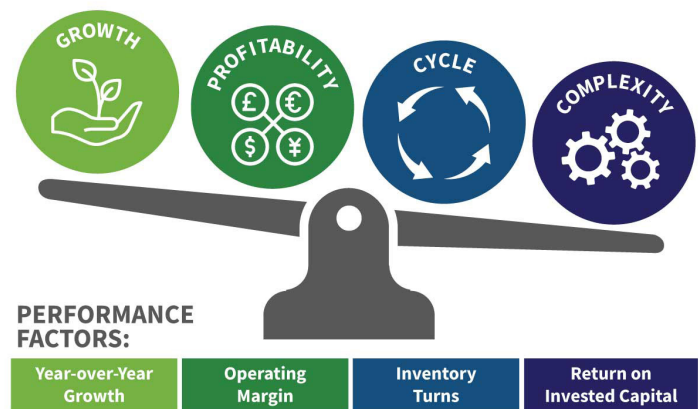
While we wish that we could include customer service in the analysis, there is no industry standard to enable the comparison. Likewise, while we strongly believe in corporate sustainability, we do not feel that any of the current sustainability indexes, due to dependency on self-reported data, are accurate reflections of company performance.

A test of a true leader is the ability to not only drive higher levels of performance within a peer group but to also sustain a competitive advantage over time. Using the Supply Chains to Admire analysis, in Table 1, we show consecutive year winners. In contrast, in Tables 2-4, we share year-over-year winners for retail, process and discrete manufacturers. It is an elite list.

Over the past seven years of analysis, more and more discrete manufacturers won the award, while fewer and fewer process manufacturers qualified for the Supply Chains to Admire recognition. While the reason is not readily apparent, our observation is that discrete manufacturers are smaller and more agile and less likely to struggle with product complexity and the traditional bias for functional excellence. Marketing-driven organizations handicap process companies, which are no substitute for market-driven planning. M&A activity was more significant in process-based companies, and within process-based companies, manufacturing processes became more global with an increase in logistics complexity and burgeoning in-transit inventories.

In Table 2, we share the elite list for retailers throughout the study. Retailers brave enough to launch and operate new business models rise to the top of the list. (This includes discount broad-line retailers, dollar stores, and healthy eating format grocers.)

The giant e-commerce providers of Amazon and Alibaba are conspicuously absent from the list. While we recognize them as supply chain leaders, the Supply Chains to Admire methodology requires a peer group comparison. The lack of a good peer group for comparison eliminates the inclusion in the analysis.

NUMBER OF SUPPLY CHAINS TO ADMIRE AWARD WINNERS							
SECTOR	2014	2015	2016	2017	2018	2019	2020
Retail	2	6	6	4	9	5	3
Process	4	5	3	4	11	6	5
Discrete	6	12	7	16	11	12	12
Winners	12	23	16	24	31	23	20

TABLE 1. Consecutive Year Winners for the Supply Chains to Admire Year-over-Year.

NUMBER OF SUPPLY CHAINS TO ADMIRE AWARD WINNERS								# OF YEARS
RETAIL	2014	2015	2016	2017	2018	2019	2020	
Ahold						X	X	2
Carters			X					1
CVS		X	X					2
Dollar General		X		X	X		X	4
Dollar Tree		X	X	X	X		X	5
Lululemon						X		1
MetroStores					X			1
Nike	X	X			X			3
PriceSmart					X			1
Michael Kors					X			1
Ralph Lauren	X							1
Ross Stores					X	X		2
Sun Drug				X				1
Target			X					1
TJX				X	X	X	X	4
Urban Outfitters					X			1
Walmart		X	X					2
Whole Foods		X	X					2

TABLE 2. Consecutive Year Winners for the Supply Chains to Admire for Retail

Some companies drove year-over-year results. L'Oréal won six times out of seven years of analysis while Apple, Dollar Tree, and TSMC won for five out of seven years.

Excellence in process companies is waning. The intense focus on technology standardization and traditional process excellence are barriers to improvement. L'Oreal is the exception. The L'Oreal story is rooted in serving the consumer and fulfilling the brand promise of beauty.

Over the seven years of the analysis, discrete companies increased value to their balance sheets. With robust sourcing practices and a focus on new product launch success, companies focused on shorter cycles and improvements for time to market.

PROCESS	NUMBER OF SUPPLY CHAINS TO ADMIRE AWARD WINNERS							# OF YEARS
	2014	2015	2016	2017	2018	2019	2020	
BASF	X		X					2
Boston Beer				X				1
AbbVIE						X	X	2
Celanese					X			1
Clorox		X	X					2
Colgate-Palmolive	X							1
General Mills	X	X						2
Eastman Chemical	X	X				X		3
Ecolab						X	X	2
Ingredion						X		1
Hershey					X			1
Henkel				X				1
L'oreal					X			1
LyondellBasell					X			1
Monster Beverages					X	X	X	3
Nitto Denko					X			1
Reckitt Benckiser Group					X		X	2
PCA				X	X	X		3
PPG		X						1

TABLE 3. Consecutive Year Winners for the Supply Chains to Admire for Process-Intensive Industries

NUMBER OF SUPPLY CHAINS TO ADMIRE AWARD WINNERS								# OF YEARS
DISCRETE	2014	2015	2016	2017	2018	2019	2020	
Apple	X		X	X	X	X		5
Audi	X	X						2
Autoliv				X				1
Becton Dickinson				X				1
BorgWarner						X	X	2
Broadcom				X		X	X	3
Capri Holdings						X		1
Cisco		X	X	X				3
Continental						X		1
Coloplast		X						1
Cooper Tires			X					1
Cummins			X	X	X			3
Dover					X			1
Edwards			X					1
EMC	X	X						2
Fuji Heavy Equipment				X				1
Herman Miller				X	X	X		3
Honeywell				X	X			2
Intel	X	X						2
Intuitive Surgery						X		1
iRobot							X	1
John Deere		X						1
Leggett & Platt				X		X		2
Lexmark		X						1
Lockheed Martin						X	X	2
Paccar					X	X	X	3
Qualcomm		X		X				2
ResMed					X		X	2
Rockwell Automation					X		X	2
Samsung		X					X	2
Seagate	X							1
Sleep Number						X	X	2
Steelcase			X					1
Tempur Sealy				X				1
Toro				X			X	2
TRW	X							1
TSMC	X	X	X	X			X	5
Ubiquiti Networks				X	X	X		3
United Tractors		X		X	X		X	4
Western Digital		X			X			2

TABLE 4. Consecutive Year Winners for the Supply Chains to Admire for Discrete Manufacturers

COMPARISON OF METHODOLOGIES

Client requests initiated the work on the Supply Chains to Admire methodology. The industry was frustrated with the Gartner Top 25 approach. Companies wanted more than a popularity contest.

The request was for a data-driven analysis based on corporate financials, which allowed the comparisons of large and small companies across currencies. The goal was to understand the relative positions of companies within industry peer groups. We show the comparison of the two approaches in Table 5.

For the 2020 analysis, of the two methodologies, AbbVie, L'Oréal, and Reckitt Benckiser Group are the only three companies that meet the criteria for these two very different analysis of supply chain excellence.

Comparison	Gartner Top 25	Supply Chains to Admire™
Focus	Fortune Global 500 and Forbes 2000 lists. 12$B minimum annual revenue. (roughly 300 companies)	All public companies by analyzed by industry peer groups. 408 companies by 28 peer groups. No revenue minimum.
Analysis	2017-2019	2010-2019
Calculation	**50% Opinion:** (Equally split between analyst and peer voting) **50% Quantitative Analysis:** • Revenue Growth (3-year weighted average)-10% • Inventory Turns (one-year average)-5% • Return on Physical Assets (ROPA). Three-year weighted average -15% • Environmental, Social and Governmental responsibility (3rd party indexes)-15%	**Improvement:** Top 2/3 ranking on the Supply Chain Index. **Performance:** At or above the industry mean for: • Year-over-year revenue growth. • Operating margin. • Inventory turns. • Return on Invested Capital (ROIC). **Value:** At or above the mean for Price-to-Tangible Book or Market Capitalization. Index Calculations: https://www.slideshare.net/loracecere/sci-summit-2014-math-behind-sc-index?qid=27326733-0325-4ee7-aacd-e2827bd216de&v=&b=&from_search=11
History	16th Year	7th Year

TABLE 6. Comparison of the Gartner Top 25 to the Supply Chains to Admire

TRENDS AND INSIGHTS

In our prior interviews with companies making the Supply Chains to Admire list, we found commonalities and similar patterns. Leaders have five characteristics. We share these in Table 6.

Laggards	Leaders
Focus on Functional Metrics	Focus on Horizontal Processes
Driving Singular Metric Strategies	Building of Balanced Scorecards
Changing Leadership	Consistency of Leadership and Culture
Focus Solely on Transactional Processes	Strong Planning and Network Design
Changing Focus. Adoption of Fads.	Clarity of Supply Chain Excellence.

TABLE 6. Characteristics of Supply Chains to Admire Leaders

Winning companies have longer tenure of their leadership teams, with a keen focus on long-term outcomes. There is an avoidance of supply chain fads, and multiple consulting-based projects, with a constant emphasis on supply chain excellence.

Complexity throws the supply chain out of balance. Leaders in supply chain management have robust horizontal processes: a focus on revenue management, Sales and Operations Planning (S&OP), new product launch/ innovation (NPI), Corporate Social Responsibility, and

Supplier Development. In the best organizations, these cross-functional programs align with strategy and there is a concious choice to manage complexity.

The strongest Sales and Operations Planning (S&OP), New Product Launch (NPI), and supplier development processes are in discrete industries. The gap between process-based and discrete industries widened from 2006 to 2020. We feel this is one of the reasons many process-based companies are regressing while discrete companies are advancing on the Supply Chain Metrics That Matter.

A CLOSER LOOK AT SUPPLY CHAINS TO ADMIRE

Results by Industry

In the preparation of this report, we start by mapping industry progress. Much to our chagrin, we learned that 85% of the industry sectors regressed over the last decade. Without the redesign of the supply chain, companies are unable to drive progress using traditional process paradigms. Apparel manufacturers, shown in Figure 3, is an example. While companies tout the term the use of "best practices," with the degradation in performance, there is a need to reclassify these not as best practices, but as historical processes that are no longer appropriate. As a result, there is a need to reskill and redesign supply chain processes to improve outcomes. Today, only 9% of companies actively design their supply chains to understand the impact of variability and complexity.

Source: Supply Chain Insights LLC, Corporate Annual Reports 2010-2019 from YCharts

FIGURE 3.Aggregate Trend for Apparel Manufacturers at the Intersection of Operating Margin and Inventory Turns from 2010 through 2019

Inventory is a sticky wicket—a political hot potato—in many organizations. Inventory levels at the end of 2019 were significantly higher across industries than pre-recession levels in 2007. As shown in Table 7, the lack of performance in the area of inventory optimization is a significant factor in the small number of winners in the Supply Chains to Admire Award process. (The number of winners is limited only by performance. There can be multiple winners in each industry sector.)

DAYS OF INVENTRY BY INDUSTRY: COMPARISON ACROSS TIME PERIODS					
INDUSTRIES	**YEARS**				**DIFFERENCE** (2014 - 2019 VS. 2004 - 2006) PERIODS
	(2004 - 2006)				
Food	108	115	133	184	76
Pharmaceuticals	151	164	173	202	51
Medical Device	107	123	142	152	45
Semiconductor	60	69	79	92	32
Beauty	117	127	132	141	24
Automotive Parts	47	52	61	67	20
Chemical	63	62	67	81	18
Household Products	56	53	57	74	18
Aerospace & Defense	94	89	99	107	13
Automotive	45	51	53	55	10
Food	50	51	59	60	10
Broadline Retail	71	76	74	79	8
Apparel Retail	74	77	77	81	7

TABLE 7. Inventory Levels by Industry Sector Across Time Periods

While over 82% of manufacturers greater than 5B$ in annual revenue own an advanced planning solution, the most often used technology is a spreadsheet. There is a significant gap in inventory performance between companies that use advanced optimization and those that depend on spreadsheets.

The reason for lack of use of advanced planning? There are many. The most frequently cited issues are employee turnover, ease of use, and the lack of fit for the business. The characteristics of companies having advanced planning; yet dependent on spreadsheets are:

- Buying software based on an RFP without testing. The selection of software based on an RFP causes more confusion than help. As a result, companies struggle in the selection process.
- Focus on Information Technology (I.T.) standardization. What good is a system that is standardized, but does not help to improve decisions? With the pressure on costs and the increasing impact of maintenance revenue, there is organizational tension to purchase advanced planning from previously implemented technology providers. The problem is that often the decision for I.T. standardization results in the implementation of advanced planning systems that are not used.
- Implementation emphasis on technology implementation versus capability building. When the focus is "go-live" versus a good output from the decision support system, there is a problem.
- Lack of clarity on the definition of supply chain excellence and the role of inventory.
- Struggling internally with metrics alignment. The use of cash-to-cash ((cash-to-cash)=(days of receivables)+(days of inventory-days of payables)) as a metric hide growing issues with inventory. The longer the Days of Payables in the company, the higher the chance that there is less of a focus on inventory.

To make the cut, winners pass stringent criteria. A characteristic of a winning company is redesigning the supply chain as business drivers shift versus continuance of historic practices.

When we started this analysis, we believed the analysis would favor the iconic brands of Procter & Gamble, Unilever, and Walmart top the list. However, this has not been the case. These companies struggle to outperform their peer groups on the balanced scorecard selected for this analysis.

Each sector has marked differences. As a result, the only relevant comparison is within a respective peer group. We share the detailed analysis in the back of this report, and walk-through the details of the winners are shared both on Youtube and Slideshare.

WHAT DRIVES VALUE?

When I wrote the book Bricks Matter, one of the reviewers asked, "How do you define value?" I struggled to answer the question.

The focus of the traditional supply chain organization is cost. Saving money does not drive value. So, as a part of this analysis, our goal was to answer the questions, "What drives value?" and "What steps should companies take to improve Book Value?"

The definition of Book Value is:

Price to Book Value = Market Share Price / Book Value/Share Outstanding

In our research, we find companies that have a Supply Chain Center of Excellence, an effective S&OP process, and operational supplier development programs to drive supplier reliability, are more likely to be improving book value. These processes become even more critical to managing the supply chain through the pandemic.

WHAT DRIVES MARKET VALUE?

HOW DO SUPPLY CHAIN LEADERS TRANSITION FROM A COST-BASED AGENDA TO A DRIVE VALUE?

4 FACTORS CORRELATE WITH PRICE TO TANGIBLE BOOK VALUE

1. Center of Excellence Effectiveness (r = 0.4)

2. S&OP Effectiveness (r = 0.3)

3. 2nd - 3rd Tier Supplier Visibility (r = 0.3)

4. Pain with Supplier Reliability (r = 0.3)

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Cross-Survey And Financial Analysis (2012-2015)
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FIGURE 4.Driving Market Value

RECOMMENDATIONS

When benchmarking a supply chain, companies need to look at performance and improvement (together) within a peer group of companies over time. There are trade-offs. Companies operating with higher levels of performance will struggle with improvement, while companies with a lower level of performance will drive faster rates of improvement. Continuous improvement processes do not always drive value. Why? There is a need to drive a multi-year plan reinforced with metrics to drive progress against a strategy.

As supply chain leaders develop strategies and focus on driving balance sheet improvement, we recommend that supply chain teams consider these seven recommendations:

1. Build a Guiding Coalition to Drive Improvement Based on Industry-Specific Data. To maximize potential and to set goals, organizations should benchmark against companies within their industry sector. Each industry has unique rhythms and cycles. As a result, supply chain excellence analysis needs to be an industry-specific comparison.

2. Understand the Supply Chain Potential and Orchestrate Trade-offs. Balanced metrics portfolios drive higher levels of value for the Company. The metrics are nonlinear and tightly coupled. Managing them as a group in a balanced portfolio requires system thinking. Companies with higher performance use advanced analytics to plan outcomes and design the supply chain.

3. Drive Horizontal Alignment. We find that those who have the best performance on the Effective Frontier align teams to focus on supply chain finance, and the translation of supply chain processes and strategies into balance sheet results. Holistic organizational thinking is a marked departure from traditional functional thinking, shifting the need for new forms of analytics and reporting. For example, today, while most organizations can easily access functional costs, only 24% of companies quickly access total costs across source, make and deliver together. As a result, it is tough for operational teams to make trade-offs.

4. Make the Supply Chain an Engine for Growth. When we present this data to many supply chain teams, there is a pushback. Many do not understand how their work can drive growth. Unfortunately, companies stuck in a cost-focused paradigm with significant gaps in horizontal organizational alignment between operations and commercial teams struggle. To break the cycle, use this report to shine a light on the opportunity, and take steps to drive growth.

5. Effectively Manage Complexity. When we interviewed the leaders in past reports, we heard a consistent theme. Product and customer complexity increases degrade value. In an organization, there is good complexity and bad complexity. Good complexity drives growth with minimal impact on the performance factors on the Effective Frontier, while bad complexity degrades performance. Maximize the growth opportunity with good complexity and eliminate bad complexity.

6. Focus on Building Value Networks. While many of the companies in this report could leverage power in the network to be a powerbroker in the industry to redefine outside-in processes, and build effective value chains, 95% of companies accept the limitations of the inside-out supply chain. Over the last decade, only TSMC and Walmart successfully executed value network strategies. Both companies made the list in prior years.

7. Learn from Other Industries. Use a Steady Hand and Focused Leadership to Drive Improvement. Over the years, when we have interviewed the Supply Chains to Admire winners and asked, "What do you think drove improvement?" they responded, "The avoidance of fads and a steady focus on supply chain strategy."

The Story of Supply Chains to Admire award winners is not a story of consultants driving a change transformation. Instead, it is a story of supply chain leadership, driven by a focused internal team over many years. Companies that did the best in the 2020 analysis have consistency in direction (same leadership team over the period), a clear definition of supply chain excellence, disciplined processes, and cross-functional alignment. As shown in the Appendix, the most significant performance improvements are in the high-tech and discrete industry sectors. These companies are the strongest in horizontal process alignment, network design, and the use of supply chain planning.

CONCLUSION

Supply chain excellence does not just "happen." It is the result of hard work by organizational teams over many years based using a multi-year roadmap with a clear definition of supply chain strategy. Success takes patience.

On the journey, companies need to be clear on the definition of supply chain excellence. This is the goal of this report. We want to helo leadership teams to better align supply chain programs with corporate finance efforts to drive improved value for shareholders. This report recognizes the 4% of companies creating value while improving and outperforming on the Supply Chain Metrics That Matter against their industry peer group. Please join us in celebrating these

ANALYSIS BY INDUSTRY

Here we share the individual analyses by industry peer groups to help the reader understand the data behind this report. The companies are listed in alpha order by sector.

Retail Overview

In this analysis, we evaluate 87 companies in five retail sectors. In the report, three companies— Ahold, Dollar Tree Stores, and TJX—qualify for the winner's circle. There are no winners in the Broadline Retail, Drug Store, Home Improvement, and Restaurant Sectors. Companies driving improvement faster than 2/3rds of the peer group are eligible for the award. The measurement for improvement is the Supply Chain Index. Shown in Table 8 and 9 is an overview of performance in the sector.

	TOTAL	SUPPLY CHAIN INDEX CUT-OFF	WINNERS
RETAIL			
Broadline Retail	20	13	1
Drug Retail	8	5	0
eCommerce Pure Play Retailers	4	3	0
Food Retail	10	7	1
Home Improvement Retail	8	5	0
Restaurants	20	13	0
Retail Apparel	21	14	1

TABLE 8.. Retail Overview

To help the reader, we also share the industry averages listed in descending order by the average operating margin in Table 9.

	NUMBER OF COMPANIES	AVERAGE REVENUE (M$)	YEAR-OVER-YEAR GROWTH	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO TANGIBLE VALUE
RETAIL	AVERAGE FOR 2010-2019						
Restaurants	20	2,756	10.5%	10.19	15.4%	29.9%	15.53
Apparel	91	8,081	5.3%	4.61	9.7%	16.4%	4.35
Drug	8	54,264	8.9%	5.66	7.8%	12.8%	3.30
Broadline	20	47,883	3.1%	4.37	6.9%	10.6%	3.07
Home Improvement	8	22,936	6.8%	4.10	4.7%	5.2%	10.41
Grocery	10	44,355	3.2%	12.81	3.5%	12.5%	2.15

TABLE 9. Retail Sector Averages for the Period of 2010-2019

Apparel Retail

The 2020 winner for Apparel Retail is TJX Companies. In 2020, the 2018 winner, Urban Outfitters, barely slips out of the winner's circle.

Shown in Table 8 are the industry averages along with the Supply Chain Index measurement of improvement.

INDUSTRY: RETAIL APPAREL								
COMPANY INFORMATION		IMPROV.	PERFORMANCE				VALUE	
NAME	2019 REVENUE (M$)	SUPPLY CHAIN INDEX	GROWTH (YEAR OVER YEAR REVENUE)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAP
2010 - 2019								
Abercrombie & Fitch Co.	3,590	3	0.9%	3.19	4.5%	4.2%	1.55	2,380
American Eagle Outfitters	4,036	15	3.2%	6.37	9.1%	13.9%	2.44	3,034
Ascena Retail Group Inc.	5,493	21	16.3%	4.00	4.2%	-3.0%	1.24	1,688
ASOS PLC	3,506	20	36.2%	2.77	5.3%	20.6%	13.19	3,882
Carter`s, Inc.	3,519	14	8.4%	3.71	11.7%	16.4%	4.80	3,884
Chico`s FAS	2,131	18	3.4%	5.85	7.2%	9.5%	2.08	1,818
Designer Brands Inc.	3,184	4	8.2%	3.95	7.7%	10.5%	2.53	2,245
Dick's Sporting Goods Inc.	8,437	13	7.5%	3.50	7.0%	16.4%	2.90	4,820
Foot Locker	7,939	1	4.4%	3.74	9.0%	15.1%	2.42	5,963
Gap Inc.	16,580	7	1.6%	5.33	10.9%	22.9%	3.96	12,138
Guess?	2,610	11	2.5%	4.34	9.1%	12.5%	2.07	2,079
J.Jill Inc.	706	2	4.9%	1.22	4.2%	3.1%	0.40	62
L Brands Inc.	13,237	11	4.0%	6.13	14.4%	19.4%	2.78	15,436
Lululemon Athletica Inc.	3,288	8	25.7%	4.20	22.2%	29.2%	10.53	11,090
Marks and Spencer Group PLC	10,377	15	-1.1%	8.41	7.5%	7.5%	2.10	8,455
Nordstrom	15,860	10	6.4%	5.28	9.0%	12.9%	6.81	9,696
Ross Stores Inc.	14,984	5	8.8%	5.87	12.9%	40.2%	8.98	21,711
Stein Mart	1,273	19	-0.3%	3.61	2.0%	6.7%	1.98	299
Tapestry Fashion Company	6,027	17	7.1%	2.78	22.0%	29.8%	5.37	12,443
TJX Companies Inc.	38,973	5	7.5%	6.12	11.3%	39.1%	10.07	43,888
Urban Outfitters	3,951	8	8.1%	6.45	12.2%	17.1%	3.18	4,175
MEAN WITH OUTLIERS			7.8%	4.61	9.7%	16.4%	4.35	8,152
MEAN WITHOUT OUTLIERS			5.3%	4.61	9.7%	16.4%	4.35	6,365

TABLE 8. Retail Sector Averages for Apparel Retail for the Period of 2010-2019

Broadline Retail

The 2020 winner for the Supply Chains to Admire in the Broadline Retail sector from 2010 to 2019 is Dollar Tree Stores. In this analysis, the 2019 winner -- Dollar General-- slips out of the winner's circle due to growth below the industry average. Of note, Walmart and Target, winners in 2016 and 2015, no longer lead their peer groups.

INDUSTRY: RETAIL BROADLINE								
COMPANY INFORMATION		IMPROV.	PERFORMANCE				VALUE	
NAME	2019 REVENUE (M$)	SUPPLY CHAIN INDEX	GROWTH (YEAR OVER YEAR REVENUE)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAP
2010 - 2019								
Bed Bath & Beyond Inc	12,029	22	5.4%	2.71	11.7%	18.2%	2.69	9,127
Best Buy Co	42,879	4	-0.2%	5.99	4.2%	12.0%	3.36	13,400
Big Lots	5,238	19	1.2%	3.60	5.5%	18.9%	2.87	1,923
Burlington Stores Inc	6,668	16	-2.1%	2.04	1.8%	-1.7%	1.95	112
Costco Wholesale	152,703	1	6.1%	3.20	5.1%	11.2%	9.53	4,959
Dillard's Inc.	6,503	7	7.9%	11.63	3.0%	13.5%	5.38	66,820
Dollar General Corp.	25,625	6	-0.6%	3.07	6.0%	9.1%	1.49	2,763
Dollar Tree Stores	22,823	5	9.4%	4.75	9.3%	12.6%	3.91	21,456
Fred's Inc.	1,272	21	4.0%	0.00	23.7%	12.8%	3.35	27,782
JC Penney Company	12,019	18	-3.1%	2.91	1.5%	-3.2%	2.11	5,889
Kohl's	20,229	15	1.4%	3.34	8.4%	8.4%	1.72	10,094
Macy's	25,739	9	0.4%	3.08	8.0%	9.0%	2.57	12,878
Office Depot Inc	10,647	13	-0.7%	6.36	4.8%	2.3%	1.44	2,467
Pricesmart Inc.	3,224	11	7.9%	8.57	3.7%	5.8%	4.25	2,155
Target	75,356	10	1.4%	6.33	6.6%	8.0%	2.88	36,126
The Michaels Companies Inc.	5,272	2	3.3%	2.63	11.3%	19.4%	0.56	8,535
Tractor Supply Co.	8,352	12	9.4%	3.29	9.7%	26.3%	6.05	7,840
Tuesday Morning	1,007	20	2.9%	2.59	0.3%	-0.8%	2.05	1,406
WalMart	514,405	8	2.2%	7.81	4.8%	10.3%	2.94	212,838
Williams-Sonoma Inc.	5,672	3	6.0%	3.57	9.0%	20.0%	0.29	4,805
MEAN WITH OUTLIERS			3.1%	4.37	6.9%	10.6%	3.07	22,669
MEAN WITHOUT OUTLIERS			3.1%	4.37	6.9%	10.6%	3.07	22,669

TABLE 11. Broadline Retail Sector Averages for the Period of 2010-2019

Drug Retail

In the 2020 analysis, there are no winners in the Drug Retail industry sector for the Supply Chains to Admire evaluation. Prior winners included SunDrug in 2017 and CVS in 2016. (SunDrug is now privately held.)

INDUSTRY: RETAIL DRUG								
COMPANY INFORMATION		IMPROV.	PERFORMANCE				VALUE	
NAME	2019 REVENUE (M$)	SUPPLY CHAIN INDEX	GROWTH (YEAR OVER YEAR REVENUE)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAP
2010 - 2019								
CVS Pharmacy	256,776	5	10.4%	9.50	5.8%	7.3%	1.97	80,106
GNC Holdings	2,068	8	2.3%	3.14	12.7%	3.5%	2.63	1,986
PetMed Express	283	2	2.7%	6.31	14.3%	26.4%	4.51	418
Raia Drogasil	4,456	4	20.0%	3.92	4.7%	10.3%	2.15	1,992
Rite-Aid Pharmacy	21,640	6	-1.6%	7.04	1.6%	3.8%	3.37	3,600
Sundrug Company LTD	5,304	6	9.5%	6.40	7.4%	15.3%	1.21	1,505
Ulta Beauty Inc	6,717	1	20.1%	3.83	11.5%	24.9%	7.96	9,702
Walgreens Boots Alliance	136,866	3	8.0%	8.98	4.6%	10.8%	2.58	58,950
MEAN WITH OUTLIERS			8.9%	6.14	7.8%	12.8%	3.30	19,782
MEAN WITHOUT OUTLIERS			8.9%	5.66	7.8%	12.8%	3.30	19,782

TABLE 12. Drug Retail Sector Averages for the Period of 2010-2019

Grocery Retail

For 2020, Koninklijke Ahold Delhaize N.V. (Ahold) is the Supply Chains to Admire winner in Grocery Retail for two consecutive years. Prior award winners included Metro AG in 2018 and Whole Foods for the years of 2016 and 2015. Amazon purchased Whole Foods in 2014.

INDUSTRY: RETAIL HOME IMPROVEMENT								
COMPANY INFORMATION		IMPROV.	PERFORMANCE				VALUE	
NAME	2019 REVENUE (M$)	SUPPLY CHAIN INDEX	GROWTH (YEAR OVER YEAR REVENUE)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAP
2010 - 2019								
Aero Grow International	34	7	6.6%	3.72	-11.1%	-112.6%	23.20	38
American Woodmark Corporation	1,645	8	12.7%	16.57	3.3%	5.4%	3.19	973
Calloway's Nursery	57	4	5.7%	9.39	7.1%	12.1%	1.39	25
Haverty	802	2	3.2%	3.46	4.1%	7.5%	1.53	432
Lowe's Companies Inc.	71,309	5	4.0%	3.94	7.6%	10.7%	9.91	59,963
Lumber Liquidators Hldgs	1,093	5	7.6%	2.42	2.0%	1.9%	3.88	959
The Home Depot Inc.	108,203	1	4.3%	4.74	11.7%	21.8%	31.88	145,365
Tile Shop Holdings	340	3	10.0%	1.00	11.8%	-1.3%	8.28	512
MEAN WITH OUTLIERS			6.8%	5.65	4.6%	-6.8%	10.41	26,033
MEAN WITHOUT OUTLIERS			6.8%	4.10	4.7%	5.2%	10.41	420

TABLE 13. Grocery Retail Sector Averages for the Period of 2010-2019

Home Improvement Retail

In-home Improvement Retail, there are no winners in the Supply Chains to Admire analysis for 2020, and in the history of this analysis for 2016-2019, no company in this peer group qualified as a Supply Chains to Admire award winner.

INDUSTRY: RETAIL HOME IMPROVEMENT							
COMPANY INFORMATION		IMPROV.	PERFORMANCE			VALUE	
NAME	2019 REVENUE (M$)	SUPPLY CHAIN INDEX	GROWTH (YEAR OVER YEAR REVENUE)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAP
2010 - 2019							
Aero Grow International	34	7	6.6%	3.72	-11.1%	-112.6%	23.20	38
American Woodmark Corporation	1,645	8	12.7%	16.57	3.3%	5.4%	3.19	973
Calloway's Nursery	57	4	5.7%	9.39	7.1%	12.1%	1.39	25
Haverty	802	2	3.2%	3.46	4.1%	7.5%	1.53	432
Lowe's Companies Inc.	71,309	5	4.0%	3.94	7.6%	10.7%	9.91	59,963
Lumber Liquidators Hldgs	1,093	5	7.6%	2.42	2.0%	1.9%	3.88	959
The Home Depot Inc.	108,203	1	4.3%	4.74	11.7%	21.8%	31.88	145,365
Tile Shop Holdings	340	3	10.0%	1.00	11.8%	-1.3%	8.28	512
MEAN WITH OUTLIERS			6.8%	5.65	4.6%	-6.8%	10.41	26,033
MEAN WITHOUT OUTLIERS			6.8%	4.10	4.7%	5.2%	10.41	420

TABLE 14. HOME IMPROVEMENT Retail Sector Averages for 2010-2019

Restaurants

In this analysis, no company in the restaurant peer group meets the criteria for the Supply Chains to Admire. Over the past seven years of analysis, there has never been a winner in this sector. Overall, the industry practices are evolving with no clear leader in supply chain management.

INDUSTRY: RESTAURANTS								
COMPANY INFORMATION		IMPROV.		PERFORMANCE			VALUE	
NAME	2019 REVENUE (M$)	SUPPLY CHAIN INDEX	GROWTH (YEAR OVER YEAR REVENUE)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAP
2010 - 2019								
BJ's Restaurants Inc.	1,161	7	10.7%	84.46	5.6%	9.5%	3.11	988
Brinker International Inc.	3,218	14	-0.0%	64.86	8.8%	17.5%	79.35	2,325
Cheesecake Factory Inc.	2,483	5	4.5%	34.54	7.5%	18.9%	3.69	2,124
Chipotle's Mexican Grill Inc.	5,586	12	14.5%	192.26	12.3%	19.2%	8.99	13,315
Cracker Barrel Old Country Store Inc.	3,072	1	2.7%	15.68	8.5%	16.9%	5.77	2,833
Darden Restaurants Inc.	8,510	9	2.4%	24.99	8.4%	14.1%	4.14	8,374
Denny's Corp.	541	13	-0.8%	134.50	11.7%	32.2%	140.76	734
Domino's Pizza Enterprises Ltd.	1,430	4	10.1%	41.68	17.1%	58.8%	N/A	5,812
Dunkin Brands Group Inc.	1,370	3	10.6%	0.00	34.7%	6.2%	N/A	N/A
Jack in the Box Inc.	950	20	-8.3%	172.83	13.8%	12.8%	19.38	2,139
McDonald's Corp.	21,077	16	-0.6%	170.94	33.1%	19.5%	4.71	108,742
Nathan's Famous Inc.	102	17	7.9%	69.94	20.4%	16.0%	2.07	231
Papa John's International	1,619	8	4.3%	44.46	6.6%	20.1%	12.78	1,747
Post Holdings Inc.	5,681	10	25.3%	6.86	12.1%	-1.7%	1.18	3,253
Red Robin Gourmet Burgers Inc.	1,315	11	4.7%	28.92	3.5%	4.0%	1.84	644
Restaurant Brands International	5,603	18	23.5%	43.97	31.8%	2.0%	3.98	7,451
Starbucks Corp.	26,509	2	10.5%	10.19	15.4%	29.9%	15.53	65,395
Texas Roadhouse Inc.	2,756	6	11.3%	97.64	8.4%	14.1%	3.57	2,558
Wendy's Co.	1,709	19	-2.5%	205.56	12.8%	4.0%	3.92	3,144
Yum Brands Inc.	5,597	15	-4.6%	33.81	22.7%	33.6%	8.03	23,559
MEAN WITH OUTLIERS			6.3%	73.90	14.8%	17.4%	17.93	13,440
MEAN WITHOUT OUTLIERS			6.3%	66.97	14.8%	15.2%	9.58	4,513

TABLE 15. Restaurant Sector Averages for the Period of 2010-2019

Discrete Industry Overview

Peer groups within the discrete industry are configure-to-order, make-to-order, or assemble-to-order businesses. The focus is on assembly and bill of material management while discussions focus on work-in-process inventories and backorder management. These industries have a strong dependency on outsourced manufacturing buoying ROIC. In these industries, historically, supply chain leadership focused on sourcing excellence. In Tables 16 and 17, we show the cut-off for each industry for the Supply Chain Index along with details of progress in the discrete industries.

DISCRETE INDUSTRY OVERVIEW

Peer groups within the discrete industry are configure-to-order, make-to-order, or assemble-to-order businesses. The focus is on assembly and bill of material management while discussions focus on work-in-process inventories and backorder management. These industries have a strong dependency on outsourced manufacturing buoying ROIC. In these industries, historically, supply chain leadership focused on sourcing excellence. In Tables 16 and 17, we show the cut-off for each industry for the Supply Chain Index along with details of progress in the discrete industries.

	TOTAL	SUPPLY CHAIN INDEX CUT-OFF	WINNERS
Discrete			
Apparel	27	18	1
Aerospace and Defense	26	17	1
Automotive	21	14	0
Automotive Aftermarket	37	25	1
B2B Technology	28	19	1
Contract Manufacturing	11	7	0
Consumer Durables	19	13	3
Diversified Industries	26	17	1
Furniture	17	11	1
Medical Device	31	21	0
Semiconductor	35	23	2
Tires	4	3	0
Telecommunications	18	12	0

TABLE 16. Overview of the Discrete Industry

	Number of Companies	Average Revenue (M$)	Year-over-Year Growth	Inventory Turns	Operating Margin	Return on Invested Capital	Price to Tangible Value
Discrete		Average for 2010-2019					
Medical Device	31	5,619	7.48%	2.89	17.5%	10.1%	3.96
Semiconductor	35	9,369	13.4%	4.66	15.4%	9.4%	3.41
Diversified Industries	26	13,736	3.5%	5.03	13.8%	9.3%	2.71
Telecommunications	18	17,208	7.8%	10.93	11.8%	9.1%	2.13
Apparel	27	7,973	8.6%	2.39	11.8%	13.6%	2.86
Automotive Aftermarket	37	11,288	6.8%	7.68	10.1%	10.0%	2.35
Tires	4	11,938	1.2%	4.51	9.6%	10.2%	1.72
Aerospace & Defense	26	18,899	3.0%	6.84	9.4%	10.0%	3.12
Trucks and Heavy Equipment	17	16,770	5.2%	4.54	8.0%	7.4%	1.91
Consumer Durables	19	15,569	7.6%	4.36	7.4%	8.5%	1.98
Automotive	21	99,331	5.8%	6.55	6.1%	5.8%	1.22
B2B Technologies	28	29,684	5.5%	6.97	6.7%	6.5%	2.07
Furniture	17	1,785	4.3%	5.89	5.8%	14.1%	4.25
Contract Manufacturing	7	6,307	5.8%	6.10	3.6%	6.3%	5.60

TABLE 17. Industry Averages for the Discrete Industry for the Period of 2010-2019

Aerospace and Defense Industry

In the Aerospace and Defense sector, Lockheed Martin places as a winner for the Supply Chains to Admire analysis for the second consecutive year. The industry struggled with growing inventory levels due to contract obligations.

INDUSTRY: AEROSPACE & DEFENSE							
COMPANY INFORMATION		IMPROV.	PERFORMANCE			VALUE	
NAME	2019 REVENUE (M$)	SUPPLY CHAIN INDEX	GROWTH (YEAR OVER YEAR REVEUE)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAP
2010 - 2019								
AAR Corporation	2,052	18	4.7%	3.28	5.0%	3.5%	1.23	1,112
AIRBUS Group	78,900	14	3.1%	1.98	2.8%	10.4%	5.93	54,480
Astronics	773	20	17.7%	3.98	10.8%	11.6%	3.95	883
BAE Systems	23,373	2	-2.9%	8.21	8.0%	12.1%	4.30	21,273
BOEING	76,559	17	1.8%	1.61	7.1%	33.5%	81.66	108,786
Bombadier	15,757	21	-1.1%	2.73	3.6%	-13.2%	2.47	5,442
BWX Technologies	1,895	26	-1.6%	18.73	11.0%	20.3%	10.77	3,421
Ducommun	721	12	6.6%	4.26	5.6%	0.9%	1.20	292
Embraer	5,463	25	0.2%	1.83	6.4%	2.5%	1.38	4,873
General Dynamics	39,350	10	2.3%	4.86	12.1%	14.7%	3.36	40,700
Heico	2,056	8	14.4%	2.96	19.2%	11.4%	4.77	4,661
Hexcel Corporation	2,356	5	8.0%	4.88	16.2%	12.9%	3.50	4,087
Huntington Ingalls Industries	8,899	19	2.9%	24.96	8.7%	12.3%	3.85	5,686
Kaman Aircraft	762	4	-0.7%	3.08	6.6%	8.5%	2.21	1,207
L3 Technologies	9,263	23	7.2%	5.28	16.0%	8.3%	3.55	13,016
Lear Corporation	19,810	16	7.7%	17.43	5.9%	17.7%	2.27	7,435
Leonardo	15,431	14	-4.5%	2.37	4.7%	1.0%	1.08	5,620
Lockheed Martin	59,812	7	3.4%	13.69	11.1%	31.9%	98.76	60,321
Magellan Aerospace Corporation	1,016	10	4.2%	4.28	10.0%	9.7%	1.15	650
National Presto Industries	309	24	-4.0%	3.17	16.3%	12.9%	1.90	641
Northrop Grumman	33,841	12	0.4%	28.53	12.4%	14.1%	4.38	33,097
Raytheon	76,891	6	4.1%	4.81	13.8%	11.0%	1.94	57,698
Spirit AeroSystems Holdings	7,863	1	6.9%	3.51	7.4%	9.5%	3.48	5,859
TAT Technologies	102	22	2.4%	2.00	2.1%	0.0%	0.69	60
TransDigm Group	5,223	8	21.9%	2.10	41.0%	6.8%	2.38	12,217
Woodward	2,900	3	7.6%	3.33	12.1%	9.3%	3.08	3,827
MEAN WITH OUTLIERS			4.3%	6.84	10.6%	10.8%	9.82	17,590
MEAN WITHOUT OUTLIERS			3.0%	6.84	9.4%	10.0%	3.12	13,942

TABLE 18. Industry Averages for the Aerospace Sector for the Period of 2010-2019

Apparel

With the continual shift in low-cost country sourcing, the pressure for ethical practices, and the evolution of the circular economy, apparel manufacturers continually innovate.   Apparel Manufacturer, Capri Holdings LTD, placed as a winner in the Supply Chains to Admire analysis for 2019 while VF Corp is the winner in 2020. (Capri Holdings, LTD is the new name for the Michael Kors/Versace merger.)

Michael Kors was a winner in 2018. Across the years, the award went to a variety of companies. Ralph Lauren won in 2014 and Nike was a winner in 2017, 2015 and 2014. In this analysis, Steve Madden is of note. The Company met the value and performance criteria but did not achieve the index threshold to make the listing for the Supply Chains to Admire 2020.

INDUSTRY: APPAREL								
COMPANY INFORMATION		IMPROV.	PERFORMANCE				VALUE	
NAME	2019 REVENUE (M$)	SUPPLY CHAIN INDEX	GROWTH (YEAR OVER YEAR REVENUE)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAP
2010 - 2019								
Adidas	26,465	4	6.4%	2.90	8.5%	12.8%	3.96	28,503
Belluna Co.	1,602	10	4.4%	2.90	6.4%	5.4%	0.43	354
Bosideng International	1,548	19	11.3%	2.57	13.4%	9.0%	0.96	1,183
Capri Holdings LTD	5,238	1	29.1%	0.01	21.7%	29.2%	0.00	0
Colombia Sportswear	3,042	2	9.6%	2.71	9.8%	11.1%	2.49	3,623
Crocs	1,231	5	7.2%	3.56	5.8%	10.8%	5.62	1,340
Deckers Outdoors	2,020	14	10.1%	2.98	12.1%	15.5%	3.15	2,777
Fossil Group	2,218	24	4.7%	2.50	10.9%	10.5%	3.14	3,188
Gildan Activewear	2,824	17	11.0%	2.36	14.0%	14.6%	3.12	5,566
Hanes Brands	6,967	7	6.1%	2.14	11.1%	10.0%	5.65	6,343
Hennes & Mauritz AB	2,366	26	6.5%	0.00	13.8%	31.2%	0.00	0
Hugo Boss	3,229	15	4.4%	1.79	15.2%	26.4%	4.09	4,180
Interface Inc	1,343	8	4.8%	3.88	10.1%	6.8%	3.45	1,116
Moet Louis Vuitton	60,061	20	9.9%	1.24	20.0%	12.9%	3.54	112,252
Moncler	1,497	25	12.1%	0.00	24.6%	15.7%	0.00	0
Nike	39,117	22	7.5%	4.00	13.2%	22.7%	8.02	85,153
Puma	6,160	11	6.4%	2.87	6.0%	7.9%	1.65	3,226
PVH	9,657	12	17.6%	3.15	8.6%	6.4%	1.86	7,696
Ralph Lauren	6,313	23	2.7%	3.30	13.0%	12.4%	3.05	11,084
Skechers	5,220	9	15.0%	2.89	6.7%	9.6%	2.08	3,145
Steve Madden	1,787	21	14.4%	9.26	13.4%	18.8%	3.31	2,206
Under Armour	5,267	15	20.6%	2.70	8.5%	9.9%	1.62	3,283
Unifirst	1,809	5	6.0%	11.30	12.5%	9.7%	1.86	2,319
Vera Bradley	416	17	6.5%	1.98	12.1%	22.3%	6.01	761
VF Corporation	13,849	3	33.4%	3.53	13.3%	13.6%	5.11	24,518
Wacoal Holdings Corporation	1,752	26	0.4%	0.00	4.9%	3.4%	0.00	0
Wolverine World Wide	2,274	13	9.1%	3.84	9.4%	9.3%	2.96	2,431
MEAN WITH OUTLIERS			10.3%	3.0	11.8%	13.6%	2.86	11,712
MEAN WITHOUT OUTLIERS			8.6%	2.4	11.8%	13.6%	2.86	2,742

TABLE 19. Apparel Sector Evaluation for the Period of 2010-2019

Automotive

Over the last decade, automotive manufacturers improved cost but failed to drive improvement on the balanced scorecard of growth, operating margin, inventory, and asset utilization. The reason? Many of the cost gains were at the expense of the second and third-tier partners.

From 2010 to 2019, there are no winners in the Supply Chains to Admire analysis in the automotive industry. Audi, in the past, led the industry. In 2014-2015, Audi won the Supply Chains to Admire award. From 2016 through 2019, Audi met the performance criteria but failed to drive the required level of improvement. It is hard to beat peer group performance while sustaining year-over-year improvement. In the most recent analysis, Audi met neither criteria.

INDUSTRY: AUTOMOTIVE								
COMPANY INFORMATION		IMPROV.	PERFORMANCE				VALUE	
NAME	2019 REVENUE (M$)	SUPPLY CHAIN INDEX	GROWTH (YEAR OVER YEAR REVENUE)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAP
2010 - 2019								
Audi AG	62,331	18	4.7%	7.70	9.7%	19.5%	0.93	24,640
Bayerische Motoren Werke AG	116,663	9	5.3%	6.18	9.9%	5.2%	1.31	61,276
BYD - Build Your Dream	18,493	16	12.5%	4.96	5.1%	3.4%	2.50	12,799
Daimler AG	193,388	17	6.0%	5.02	6.9%	5.0%	1.25	73,264
Ferrari NV	4,217	1	4.3%	3.34	15.4%	10.8%	13.29	11,700
Fiat Chrysler Automobiles NV	121,115	5	3.1%	15.14	3.9%	5.3%	2.19	50,166
Ford Motor Co	155,900	19	12.2%	7.76	4.0%	4.8%	0.58	13,606
General Motors Co	137,237	14	3.3%	10.65	3.4%	8.4%	1.40	50,398
Honda Motor Co Ltd	143,317	10	3.9%	7.35	5.0%	4.3%	0.97	58,737
Isuzu Motors Ltd	19,386	4	4.2%	7.73	7.8%	9.8%	1.38	8,991
Mazda Motor Corp	32,154	12	2.5%	7.14	3.3%	3.3%	1.17	8,565
Mitsubishi Motors Corp	145,258	15	13.2%	5.45	4.7%	3.8%	0.69	36,020
Nissan Motor Co Ltd	104,401	8	2.6%	7.59	5.6%	4.1%	0.90	36,568
Peugeot SA	83,661	6	2.8%	8.89	3.8%	3.0%	0.51	8,138
Renault SA	62,174	21	3.6%	8.36	5.0%	3.7%	0.41	13,688
Subaru	28,508	12	7.3%	7.08	9.2%	14.0%	1.98	19,421
Suzuki Motor Corp	34,921	3	1.8%	7.82	6.3%	5.7%	0.31	4,138
Tata Motors Ltd	42,795	20	11.4%	5.37	1.1%	6.7%	2.71	17,639
Tesla Inc	24,578	7	89.2%	3.38	-39.5%	-143.4%	18.79	30,733
Toyota Motor Corp	272,639	2	3.0%	10.80	6.4%	4.3%	1.15	170,064
Volkswagen AG	282,822	10	7.3%	5.07	5.2%	5.3%	0.75	78,502
MEAN WITH OUTLIERS			9.7%	7.28	3.9%	-0.6%	2.63	37574
MEAN WITHOUT OUTLIERS			5.8%	6.55	6.1%	5.8%	1.22	23630

TABLE 20. Automotive Sector Evaluation for the Period of 2010-2019

Automotive Parts

Over the last decade, this industry managed increased complexity to drive continuous improvement in cost. In parallel, inventory turns improved from 2010 to 2019 but slipped due to pressures from tier-one manufacturers from 2017 through 2019. In the Supply Chains to Admire 2018 analysis, Borg Warner makes the winners circle for the second time while Continental slips out of the winner's list due to performance. Autoliv was a winner in 2017.

INDUSTRY: AUTOMOTIVE PARTS								
COMPANY INFORMATION			IMPROV.	PERFORMANCE			VALUE	
NAME	2019 REVENUE (M$)	SUPPLY CHAIN INDEX	GROWTH (YEAR OVER YEAR REVENUE)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAP
2010 - 2019								
Advance Auto Parts	9,709	29	7%	1.33	0.09	17%	4.48	8,895
Aisin Seiki Co Ltd	36,469	26	5%	11.85	0.07	5%	0.51	5,329
Allison Transmission Holdings Inc	2,698	1	4%	6.68	0.25	9%	4.61	4,227
American Axle & Manufacturing	6,531	30	17%	13.43	0.08	12%	6.43	1,306
Autoliv Inc	8,548	26	6%	9.91	0.09	11%	2.05	6,271
BorgWarner Inc	10,168	14	11%	11.22	0.12	12%	2.76	9,342
Commercial Vehicle Group	901	11	8%	8.45	0.04	5%	4.84	229
Continental AG	49,793	26	6%	8.21	0.10	10%	2.43	33,139
Cooper-Standard Holdings Inc	3,108	21	6%	15.68	0.05	7%	1.36	1,028
Dana Inc	8,620	4	6%	7.73	0.07	9%	2.61	2,707
Danaher Corporation	17,911	18	6%	4.46	0.17	9%	2.17	50,950
Delphi Automotive PLC	4,361	22	-0%	4.33	0.06	6%	1.17	702
Denso Corp.	48,373	15	5%	8.34	0.07	6%	1.11	31,200
Dorman Products Inc.	991	33	10%	2.54	0.18	19%	3.53	1,805
Douglas Dynamics	572	6	15%	4.45	0.16	7%	2.77	597
Gentex Corp.	1,859	15	14%	5.09	0.27	18%	3.37	5,006
Gentherm Inc.	972	34	42%	7.10	0.10	12%	3.54	1,014
Hella KGaA Hueck & Co.	7,996	2	3%	6.19	0.06	10%	0.54	1,481
Johnson Controls	23,968	20	2%	10.55	0.06	7%	1.74	25,515
JTEKT Corp.	13,719	18	4%	6.55	0.04	4%	0.48	2,006
Koito Manufacturing Co Ltd	7,453	7	6%	10.04	0.10	10%	0.78	2,944
LKQ Corp	12,506	24	20%	2.70	0.10	8%	2.82	8,193
Mabuchi Motor Co Ltd.	1,209	9	5%	3.25	0.12	6%	0.64	1,322
Magan International	39,431	15	9%	10.83	0.06	15%	1.65	15,747
Meritor Inc	4,388	3	5%	8.25	0.05	46%	1.78	1,281
Motorcar Parts of America	473	31	14%	2.91	0.13	3%	1.89	352
Nexteer Automotive Group Ltd.	3,576	5	6%	9.50	0.07	11%	0.34	590
NGK Spark Plug Co Ltd.	3,834	9	3%	3.11	0.13	8%	0.23	823
O'Reilly Automotive	10,150	8	8%	1.41	0.17	25%	24.78	19,397
PT Astra International Tbk.	16,751	25	7%	9.30	0.10	12%	2.42	18,924
Stanley Electric Co Ltd.	3,916	12	3%	10.79	0.11	8%	0.59	1,738
Tenneco Inc.	17,450	27	15%	9.00	0.05	10%	55.82	2,569
The Timken Company	3,790	13	4%	3.42	0.12	11%	1.90	3,307
Toyoda Gosei Co Ltd.	7,288	23	3%	12.01	0.06	5%	0.30	874
Valeo SA	21,804	32	8%	10.67	0.07	10%	2.33	8,810
Visteon Corp	2,945	35	-2%	14.04	0.05	17%	3.49	3,311
WABCO Holdings Inc.	3,421	28	10%	8.79	0.12	23%	6.56	5,465
MEAN WITH OUTLIERS			0.08	7.68	0.10	11%	4.35	7,794
MEAN WITHOUT OUTLIERS			0.07	7.68	0.10	10%	2.35	5,692

TABLE 21. Automotive Parts Sector Evaluation for the Period of 2010-2019

B2B Technology

In this harsh industry, for 2020, Samsung is the Supply Chains to Admire award winner. Apple, the five-times award winner, slips out of the winner's circle due to the loss of the relative rate of performance. Prior award winners included Western Digital in 2017, and Seagate was an award winner in 2014.

NAME	2019 REVENUE (M$)	SUPPLY CHAIN INDEX	GROWTH (YEAR OVER YEAR REVENUE)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAP
Alps Electric Co LTD	7,679	1	4%	7.27	4.9%	4.9%	1.68	3,364
Ambarella	228	28	14%	5.83	14.1%	13.9%	3.79	1,147
Apple Inc.	260,174	26	22%	57.64	28.8%	30.3%	5.98	640,535
Bang & Olufsen A/S	435	27	-1%	3.43	-5.4%	-1.3%	0.45	105
Eastman Kodak Co.	1,242	20	-16%	4.56	-2.7%	-7.2%	1.83	398
EnerSys Manufactures	2,808	8	4%	4.84	10.4%	9.4%	2.27	2,599
Funai Electric Co LTD.	952	21	-10%	4.77	-2.0%	-7.8%	0.06	43
GoPro Inc.	1,195	7	24%	4.23	0.4%	-2.6%	2.75	1,427
Hewlett Packard	58,756	11	-5%	10.58	7.9%	29.4%	0.51	27,777
Hewlett Packard Enterprise Company	29,135	17	-6%	12.61	5.9%	2.6%	0.42	9,974
JVC Kenwood Corp.	2,775	23	-0%	5.88	2.0%	-1.0%	0.14	81
Lenovo Group	51,038	6	14%	15.38	1.6%	10.9%	3.12	8,917
LG Display Co LTD	20,144	25	3%	9.94	3.0%	2.1%	0.85	8,747
LG Electronics	100	5	31%	5.29	23.5%	3.7%	N/A	N/A
Logitech International	2,788	4	3%	5.68	6.4%	10.0%	3.60	3,477
LSI Industries	329	21	4%	5.14	2.1%	0.3%	1.28	185
NCR	6,915	2	4%	6.12	7.1%	5.4%	4.28	3,944
Nintendo Co LTD	10,829	18	0%	5.44	7.7%	5.8%	2.08	26,140
Samsung	221,600	12	12%	7.26	38.7%	13.9%	N/A	N/A
Seagate	10,390	16	1%	9.71	13.0%	23.4%	5.98	12,621
Seiko Epson Corp.	9,829	13	-1%	3.70	5.8%	7.2%	N/A	N/A
Sharp Corp.	21,649	3	-2%	7.48	0.3%	-9.6%	2.25	7,708
Sony Corp.	78,166	13	0%	8.65	3.6%	0.7%	1.32	37,456
Super Micro Computer Inc.	3,500	15	22%	3.76	4.5%	9.7%	1.68	932
Truly International Holdings Limited	2,094	19	15%	9.09	6.6%	6.1%	0.61	552
Universal Electronics Inc.	753	10	10%	3.74	4.6%	5.8%	2.21	603
Western Digital Corp.	16,569	23	10%	7.80	11.7%	10.5%	1.74	15,771
Xerox	9,066	9	-3%	10.01	9.8%	4.3%	0.88	7,581
MEAN WITH OUTLIERS			6%	8.78	7.6%	6.5%	2.07	32,883
MEAN WITHOUT OUTLIERS			6%	6.97	6.7%	6.5%	2.07	7,565

TABLE 22.   B2B Technology Sector Evaluation for the Period of 2010-2019

Consumer Durables

From 2010 to 2020, there are three Supply Chains to Admire Award Winners in the peer group of Consumer Durables: iRobot, Paccar, and Toro. This year is the first time in the Supply Chains to Admire for durable consumer winners.

INDUSTRY: HOUSEHOLD - DURABLE								
COMPANY INFORMATION			IMPROV.	PERFORMANCE			VALUE	
NAME	2019 REVENUE (M$)	SUPPLY CHAIN INDEX	GROWTH (YEAR OVER YEAR REVENUE)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAP
2010 - 2019								
Armstrong World Industries	1,038	1	-7.0%	7.12	12.75%	8.21%	6.06	2,718
Assa Abloy AB	2,493	6	8.2%	4.90	15.27%	11.10%	3.81	18,473
Breville Group	544	4	20.5%	3.77	12.03%	20.50%	1.50	328
Canon	32,970	15	7.2%	3.72	8.71%	7.18%	0.83	23,397
Compagnie de Saint-Gobain SA	4,766	14	3.7%	5.13	6.93%	3.68%	0.69	14,390
Electrolux AB	12,596	17	9.8%	6.81	4.05%	9.79%	3.19	7,253
Haier Electronics Group Co Ltd.	84,115	18	23.3%	13.99	4.39%	23.32%	3.75	5,474
Hamilton Beach Brands Holding Co.	613	10	3.5%	1.63	2.90%	3.54%	2.05	93
Husqvarna AB	4,476	15	7.5%	2.97	6.98%	7.47%	1.94	3,393
iRobot Corp.	1,214	12	12.7%	6.01	8.54%	12.71%	3.28	1,251
Koninkijke Philipis	21,809	11	4.4%	3.62	6.50%	4.37%	2.05	29,680
Panasonic Corp.	72,186	9	-0.6%	6.82	3.58%	-0.63%	1.38	24,231
Ryobi Ltd.	2,023	19	2.8%	4.50	3.93%	2.81%	0.10	104
SKF AB	9,106	13	11.5%	3.62	10.96%	11.50%	3.12	9,756
Snap-on Inc.	4,068	3	13.2%	3.55	19.58%	13.19%	3.00	7,231
Stanley Black and Decker Inc.	14,442	2	7.2%	4.45	12.33%	7.18%	2.42	16,479
The Timken Co.	3,790	8	11.1%	3.42	11.57%	11.08%	1.90	3,307
Toro Co.	3,138	7	25.0%	4.93	11.79%	24.96%	9.02	4,485
Whirlpool Corporation	20,419	5	7.1%	6.42	6.48%	7.10%	2.34	9,882
MEAN WITH OUTLIERS			9.0%	5.12	8.91%	9.95%	2.76	9,575
MEAN WITHOUT OUTLIERS			7.6%	4.36	7.38%	8.48%	1.98	7,783

TABLE 26. Consumer Durable Technology Sector Evaluation for the Period of 2010-2019

Contract Manufacturers

In the seven-year history of doing the analysis, a contract manufacturer has not made the list for Supply Chains to Admire. Facing tight margins, rising demand volatility, and price escalation of materials, it is a tough business.

INDUSTRY: CONTRACT MANUFACTURERS								
COMPANY INFORMATION		IMPROV.	PERFORMANCE				VALUE	
NAME	2019 REVENUE (M$)	SUPPLY CHAIN INDEX	GROWTH (YEAR OVER YEAR REVENUE)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAP
2010 - 2019								
Benchmark Electronics Inc.	2,268	8	1.2%	6.44	3.3%	4.5%	0.95	1,152
Celestica Inc.	5,888	11	1.0%	6.98	2.6%	7.4%	6.98	1,596
Flex LTD	26,211	4	-0.9%	7.21	2.0%	7.7%	7.21	5,893
Ibiden Co LTD	2,626	10	-1.2%	6.54	6.1%	1.3%	6.54	501
IEC Electronics	157	7	10.9%	5.37	3.5%	2.3%	5.37	54
IEH Corporation	28	2	10.5%	1.93	18.0%	17.8%	1.93	19
Jabil Circuit Inc.	25,282	3	8.4%	6.73	3.0%	7.0%	6.73	4,370
Kimball International	768	1	-1.6%	8.34	3.3%	10.2%	8.34	450
Plexus Corp.	3,164	5	7.3%	4.10	4.5%	8.3%	4.10	1,480
Sigmatron International	291	9	8.5%	3.24	1.6%	1.3%	3.24	24
TTM Technologies Inc.	2,689	6	20.2%	10.20	6.5%	1.6%	10.20	1,038
MEAN WITH OUTLIERS			5.8%	6.10	4.9%	6.3%	5.60	1,507
MEAN WITHOUT OUTLIERS			5.8%	6.10	3.6%	6.3%	5.60	1,068

TABLE 27. Contract Manufacturing Sector Evaluation for the Period of 2010-2019

Diversified Industries

Diversified industries are discrete conglomerates. For the Supply Chains to Admire analysis for 2020, Rockwell Automation is a winner. In 2019, Rockwell met the criteria for improvement and performance but failed the value test, while in 2018, Rockwell Automation was also a winner. Schneider Electric shows marked improvement and comes close to placing. In prior years, Honeywell was a winner for two consecutive years in 2018 and 2017.

INDUSTRY: DIVERSIFIED INDUSTRIES								
COMPANY INFORMATION		IMPROV.	PERFORMANCE				VALUE	
NAME	2019 REVENUE (M$)	SUPPLY CHAIN INDEX	GROWTH (YEAR OVER YEAR REVENUE)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAP
2010 - 2019								
ABB Ltd.	27,978	23	1%	4.70	0.10	10.6%	3.20	48,404
AMETEK Inc.	5,159	6	10%	5.17	0.22	11.6%	3.82	12,664
Avery Dennison Corporation	7,070	4	2%	8.64	0.09	11.0%	5.24	6,131
Dover Corp.	7,136	15	3%	5.53	0.14	10.9%	3.00	11,658
Eaton	21,390	11	7%	5.80	0.11	8.8%	2.00	28,249
Emerson Electric	18,372	13	1%	6.30	0.17	14.2%	4.42	40,221
Enerpack Tool Company	655	24	-4%	4.58	0.12	-1.3%	2.50	1,706
Fanuc Corporation	5,733	9	10%	2.97	0.34	11.7%	2.83	33,595
Flowserve Corp.	3,945	19	-1%	3.24	0.11	10.4%	3.60	6,666
Fortive Corp.	7,320	1	3%	4.04	0.15	10.3%	2.14	9,199
Generac Holdings	2,204	5	15%	2.83	0.17	11.6%	5.73	2,946
General Electric Co.	95,215	25	-4%	5.11	0.17	-0.6%	2.23	194,958
Honeywell	36,709	12	2%	6.35	0.14	14.4%	4.59	78,122
Hubbell Incorporated	4,591	20	7%	5.11	0.14	11.9%	2.56	4,589
Ingersoll-Rand PLC	2,452	14	1%	1.48	0.07	1.2%	1.17	1,823
Legrand SA	7,414	8	4%	3.52	0.19	10.6%	1.60	7,664
MDU Resources Group Inc	5,337	21	3%	12.95	0.09	3.1%	1.81	4,730
Morgan Advanced Materials	1,340	2	-1%	1.66	0.11	10.6%	1.40	335
MSC Industrial Direct Co. Inc.	3,364	16	9%	3.32	0.14	16.5%	3.80	4,618
Parker Hannifin	14,320	3	4%	6.90	0.12	12.0%	3.27	17,981
Regal Beloit Corp.	3,238	22	6%	3.68	0.10	5.8%	1.54	3,014
Rockwell Automation Inc.	6,695	7	5%	6.20	0.17	21.6%	10.15	16,139
Schneider Electric	30,403	10	4%	5.03	0.14	7.4%	1.82	41,066
Toshiba	33,316	25	-7%	5.78	0.04	3.9%	1.65	15,698
Trinity Industries Inc.	3,005	17	7%	4.35	0.15	5.7%	1.32	3,498
Valmont Industries Inc.	2,767	17	5%	5.54	0.10	9.0%	2.73	3,047
MEAN WITH OUTLIERS			3%	5.03	0.14	9.3%	3.08	23,028
MEAN WITHOUT OUTLIERS			3%	5.03	0.14	9.3%	2.71	19,275

TABLE 25. Diversified Sector Evaluation for the Period of 2010-2019

Furniture

In the last three years, the industry reduced costs but did not improve overall performance. The Supply Chains to Admire Award winner for the second consecutive year is Sleep Number. In 2019, Herman Miller and Leggett & Platt were award winners. Herman Miller was

INDUSTRY: FURNITURE								
COMPANY INFORMATION			IMPROV.	PERFORMANCE			VALUE	
NAME	2019 REVENUE (M$)	SUPPLY CHAIN INDEX	GROWTH (YEAR OVER YEAR REVENUE)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAP
2010 - 2019								
Bassett Furniture Industry	452	13	7%	2.85	3.4%	9.7%	1.17	202
Ethan Allen Interiors	747	16	1%	2.25	6.8%	6.9%	2.09	733
Flexsteel Industries	444	17	3%	3.62	5.2%	7.4%	1.25	234
Herman Miller	2,567	3	5%	2.64	7.1%	9.5%	0.44	637
HNI Corporation	2,247	5	3%	11.84	5.8%	10.8%	3.59	1,682
Hooker Furniture	684	1	16%	4.46	6.0%	8.0%	1.48	262
Howden Joinery Group	2,022	2	6%	2.77	15.7%	56.3%	2.59	1,573
Hunter Douglas	3,686	5	7%	5.46	9.0%	11.7%	3.97	962
Knoll Inc	1,428	15	1%	3.82	6.7%	0.5%	7.03	327
La-Z-Boy	1,745	4	5%	5.82	10.1%	11.0%	4.12	5,049
Leggett & Platt	4,753	7	4%	5.65	6.2%	12.2%	2.20	1,182
Libbey Inc	786	9	5%	13.13	7.0%	13.0%	4.67	1,767
NACCO Industries	141	11	-14%	2.99	-13.3%	10.2%	0.58	147
Natuzzi	402	14	-3%	3.39	-3.7%	-7.3%	0.42	100
Sleep Number	1,698	9	12%	8.26	8.0%	51.0%	6.31	1,174
Steelcase	3,443	8	1%	13.14	5.0%	7.0%	2.40	1,791
Tempur Sealy	3,106	12	16%	8.05	13.1%	22.3%	27.86	3,008
MEAN WITH OUTLIERS			4%	5.89	5.8%	14.1%	4.25	1,225
MEAN WITHOUT OUTLIERS			6%	5.89	7.7%	10.8%	4.74	1,225

TABLE 26. Furniture Sector Evaluation for the Period of 2010-2019

Medical Device

In this year's analysis, the winner for the medical device industry is ResMed. Intuitive Surgical, a robotic manufacturer for surgery won in 2019. ResMed in 2018, Becton Dickinson in 2017, Edwards in 2016, and Coloplast in 2015. The shifts in the industry reflect industry immaturity as various companies rise and fall without maintaining a consistent advantage over their peer group.

INDUSTRY: MEDICAL DEVICES								
COMPANY INFORMATION		IMPROV.	PERFORMANCE				VALUE	
NAME	2019 REVENUE (M$)	SUPPLY CHAIN INDEX	GROWTH (YEAR OVER YEAR REVENUE)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAP
2010 - 2019								
Abiomed Inc	769	31	26.8%	2.22	8.40%	11.47%	9.01	4357
Ansell Ltd	1529	22	4.8%	3.08	12.83%	11.21%	1.03	1249
Becton Dickinson and Co	17290	6	10.0%	3.15	17.29%	9.67%	3.95	35242
Bio-Rad Laboratories Inc	2312	10	2.7%	1.91	9.53%	7.90%	1.80	5020
Boston Scientific	10735	24	2.9%	2.46	14.21%	1.00%	3.11	26101
Bruker Corp	2073	5	6.8%	1.84	11.20%	10.35%	5.21	3923
Charles River Laboratories International Inc	2621	17	8.7%	9.29	14.14%	5.31%	3.99	3617
Coloplast	2712	6	5.5%	3.31	30.15%	40.36%	12.24	9410
ConvaTec Group PLC	1827	12	0.8%	2.20	9.35%	1.00%	0.94	1403
Dentsply Sirona Inc	4029	24	7.1%	3.32	13.69%	3.06%	2.52	8763
Edwards Lifesciences	4348	2	12.7%	1.81	24.26%	19.86%	7.46	19008
Fisher & Paykel Healthcare Corp Ltd	749	14	9.2%	2.70	18.66%	20.28%	2.14	1165
Hill-Rom Holdings Inc	2907	30	8.1%	6.06	10.91%	7.62%	3.30	3714
Hologic Inc	3367	16	7.6%	4.22	13.36%	1.00%	3.74	8808
Intuitive Surgical Inc	4479	23	16.1%	3.96	34.52%	17.54%	6.19	29112
Medtronic	30557	24	8.3%	2.41	24.82%	8.57%	2.58	83952
Mettler-Toledo International Inc	3009	3	5.9%	4.85	20.19%	26.59%	17.67	10039
MicroPort Scientific Corp	793	29	29.6%	1.30	15.86%	5.93%	1.28	554
PerkinElmer Inc	2884	18	6.6%	4.28	11.24%	6.30%	2.53	5777
ResMed Inc	2607	8	11.0%	3.14	23.37%	14.59%	5.21	9655
Smith and Nephew	5138	20	3.2%	1.04	20.45%	13.01%	3.45	13952
Stryker	14884	19	8.3%	1.96	21.10%	11.52%	4.07	39970
Teleflex Inc	2595	14	4.4%	2.51	16.96%	5.67%	2.97	6931
Terumo Corp	5407	21	6.3%	2.48	16.53%	8.08%	6.46	31077
The Cooper Companies Inc	2653	9	9.5%	1.81	17.93%	7.41%	2.79	7814
Thermo Fisher Scientific Inc	25542	4	10.0%	4.71	13.60%	5.99%	2.48	56005
Varian Medical Systems Inc	3225	11	4.2%	3.34	18.52%	19.56%	5.21	8351
Waters Corp	2407	13	4.9%	3.31	28.34%	16.49%	18.21	10470
West Pharmaceutical Services Inc	1840	1	5.7%	5.30	12.93%	9.74%	4.19	4806
Wright Medical Group NV	921	24	18.1%	0.89	-14.36%	-19.81%	2.75	1811
Zimmer Biomet Holdings	7982	28	7.4%	1.06	21.58%	6.33%	2.19	18447
MEAN WITH OUTLIERS			8.8%	3.09	16.50%	10.12%	4.86	15,178
MEAN WITHOUT OUTLIERS			7.5%	2.89	17.53%	10.11%	3.96	12,885

TABLE 30. Medical Device Sector Evaluation for the Period of 2010-2019

Telecommunications

In the telecommunications market, Ubiquiti Networks wins the 2019 Supply Chains to Admire award for the fourth consecutive year. Cisco Systems, a winner in the 2014-2017 periods, fails to make the winner circle criteria based on underperformance on growth

	COMPANY INFORMATION		IMPROV.	PERFORMANCE				VALUE	
NAME	2019 REVENUE (M$)	SUPPLY CHAIN INDEX	GROWTH	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL		PRICE TO BOOK	MARKET CAP
2010 - 2019									
Adtran	530	15	2%	3.35	0.07	6%		2.16	1,198
Avnet	19,519	8	4%	7.52	0.03	7%		1.16	5,046
Belden	2,131	11	5%	6.20	0.09	4%		2.59	2,423
Cisco Systems Inc.	51,904	3	4%	12.00	0.24	11%		2.90	145,296
EchoStar Group	1,886	18	2%	22.96	0.07	2%		0.89	3,176
Ericsson	24,054	13	-1%	5.27	0.05	1%		1.97	31,259
Fabrinet	1,584	5	15%	5.15	0.08	13%		1.99	1,070
Juniper Networks	4,445	12	3%	23.51	0.15	6%		1.97	11,023
Motorola Solutions	7,887	1	-5%	8.62	0.17	14%		3.68	16,117
Nokia Oyj	26,101	10	-2%	6.50	0.05	2%		1.89	26,633
Rogers Communications Inc.	11,357	14	1%	27.15	0.23	9%		4.12	7,273
Skyworth Digital Holdings LTD	38,258	16	10%	5.63	0.05	9%		0.35	161
T-Mobile US Inc.	33,600	4	51%	17.70	0.10	-14%		1.67	30,788
TELUS Corp	14,589	7	4%	15.32	0.19	8%		2.82	23,673
Ubiquiti Networks	1,162	2	39%	10.88	0.30	46%		16.63	4,160
Vodafone Group PLC	50,580	17	-2%	60.78	0.11	7%		0.82	83,358
Vtech	2,162	9	4%	4.68	0.12	32%		5.56	2,610
ZTE	1,314	6	5%	3.39	0.04	2%		2.53	9,950
MEAN WITH OUTLIERS			8%	13.70	0.12	9%		3.09	22,512
MEAN WITHOUT OUTLIERS			8%	10.93	0.12	9%		2.13	15,289

TABLE 31. Telecommunications Sector Evaluation for the Period of 2010-2019

Semiconductor Industry

Sitting back three and four levels deep in the supply chain, for a semiconductor company survival, depends on supply chain management excellence. In this industry, Broadcom wins the Supply Chains to Admire award for the four consecutive years, while Taiwan Semiconductor (TSMC) returns to the winners circle for the fifth time.

INDUSTRY: SEMICONDUCTOR INDUSTRY								
COMPANY INFORMATION		IMPROV.	PERFORMANCE				VALUE	
NAME	2019 REVENUE (M$)	SUPPLY CHAIN INDEX	GROWTH (YEAR OVER YEAR REVENUE)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAP
2010 - 2019								
Acacia	465	1	25.7%	3.96	6.5%	7.5%	1.95	807
Advanced Semiconductor	13,376	29	21.7%	5.66	9.3%	7.9%	0.30	1,980
Advanded Micro Devices	6,731	17	3.5%	5.22	0.3%	-6.8%	10.71	11,085
Analog Devices	5,991	22	13.0%	3.25	29.7%	12.8%	3.39	21,571
Applied Materials Inc.	14,608	9	14.6%	3.20	19.1%	14.8%	3.76	29,511
Applied Optoelectronics	191	20	21.2%	2.34	0.1%	2.4%	1.24	233
AXT	83	31	6.5%	1.48	7.0%	4.1%	1.16	166
Broadcom	22,597	13	34.4%	6.60	19.8%	15.3%	5.01	50,564
Cabot Microelectronics	1,038	6	15.6%	3.57	18.8%	9.9%	2.90	1,710
ChipMOS Technologies	658	2	0.8%	8.32	9.4%	6.4%	1.06	600
Cirrus Logic	1,186	23	25.2%	4.13	17.3%	21.1%	2.81	2,240
Cree	1,080	34	10.5%	3.67	5.3%	-0.9%	1.81	4,329
Cypress Semiconductor	2,205	24	17.4%	4.52	-1.6%	-0.7%	5.17	3,654
DAQO New Energy	350	30	23.1%	10.96	12.8%	3.2%	0.98	295
Diodes	1,249	15	11.9%	3.26	9.2%	5.5%	1.73	1,367
Infineon Technologies AG	9,059	14	12.9%	3.77	13.4%	14.4%	2.77	16,855
Intel	71,965	21	7.8%	4.18	29.2%	17.6%	2.67	166,193
Lam Research Corporation	9,654	6	27.6%	3.47	18.6%	15.1%	3.23	16,000
Marvell Technology Products	2,866	33	0.9%	5.54	11.9%	5.4%	1.71	8,921
Maxim Integrated Products	2,314	3	4.0%	3.64	25.1%	13.2%	5.10	10,703
Microchip Technology Inc.	5,350	16	21.2%	3.28	20.9%	9.3%	4.29	12,382
Micron Technology Inc.	23,406	11	23.0%	3.57	17.3%	13.0%	1.63	26,295
NVIDIA Corp.	11,716	35	10.6%	4.69	18.6%	16.0%	6.18	47,526
NXP Semiconductor	8,877	28	10.9%	3.71	12.6%	5.2%	7.34	20,467
ON Semiconductor Corp.	5,518	25	13.8%	3.15	10.2%	6.4%	2.77	5,408
Qualcomm	24,273	12	9.8%	6.46	25.1%	13.3%	6.65	96,305
Ricoh	18,160	10	-1.3%	6.45	3.6%	0.9%	2.35	23,506
Semtech	627	4	9.2%	3.65	10.9%	4.2%	3.27	2,063
Silicon Laboratories Inc.	838	26	6.8%	4.69	10.4%	6.0%	3.21	2,638
Skyworks Solutions Inc.	3,377	5	16.6%	4.26	26.3%	19.8%	3.53	10,957
Taiwan Semiconductor	34,638	19	15.1%	7.27	37.1%	21.9%	3.76	139,281
Texas Instruments	14,383	18	3.9%	3.22	33.7%	23.7%	6.49	64,912
Tower Semiconductor	1,234	32	18.4%	7.41	5.3%	1.6%	2.34	1,207
United Microelectronics	4,798	27	6.4%	6.89	6.0%	4.3%	0.79	5,469
Xilinx	3,059	8	5.9%	3.50	30.0%	15.8%	5.27	13,894
MEAN WITH OUTLIERS			13.4%	4.66	15.1%	9.4%	3.41	23,460
MEAN WITHOUT OUTLIERS			13.4%	4.66	15.4%	9.4%	3.41	13,104

TABLE 29. Semiconductor Sector Evaluation for the Period of 2010-2019

Tires

Over the last decade, the tire industry chased cost. Inventory turns declined. For the period, in this analysis, there are no Supply Chains to Admire winners for the tire industry. In prior years, Cooper Tires was a winner in 2016 and Bridgestone in 2017. Each Company has a unique definition of supply chain strategy; each has pursued technology and process excellence projects over the last decade, attempting to drive differentiation. Supply chain excellence remains elusive.

INDUSTRY: TIRES								
COMPANY INFORMATION		IMPROV.	PERFORMANCE				VALUE	
NAME	2019 REVENUE (M$)	SUPPLY CHAIN INDEX	GROWTH (YEAR OVER YEAR REVENUE)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAP
2010 - 2019								
Bridgestone	3,235	2	1.9%	4.01	0.11	9.4%	1.40	25,508
Cooper Tire & Ruber	2,753	4	0.5%	5.89	0.09	12.9%	1.92	1,653
Goodyear Tire & Rubber	14,745	3	-0.5%	4.76	0.07	6.4%	2.73	5,643
Michelin	27,019	1	3.1%	3.37	0.12	11.9%	0.84	10,440
MEAN WITH OUTLIERS			1.2%	4.51	0.10	10.2%	1.72	10,811
MEAN WITHOUT OUTLIERS			1.2%	4.51	0.10	10.2%	1.72	10,811

TABLE 27. Tire Sector Evaluation for the Period of 2010-2019

Trucks and Heavy Equipment

In the last three years, the industry reduced cost, but not overall performance. Paccar and United Tractors are industry winners for the Supply Chains to Admire analysis. This is the third year for Paccar to place in the winner's circle. Cummins Engine outperformed in the 2016-2017 analysis.

INDUSTRY: TRUCKS & HEAVY EQUIPMENT								
COMPANY INFORMATION		IMPROV.	PERFORMANCE				VALUE	
NAME	2019 REVENUE (M$)	SUPPLY CHAIN INDEX	GROWTH (YEAR OVER YEAR REVENUE)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAP
2010 - 2019								
Agco Corporation	9,041	14	4.2%	4.10	6.0%	7.6%	1.56	4,766
Caterpillar	53,800	8	7.0%	3.27	10.4%	7.0%	4.20	63,247
Cummins	23,571	12	8.9%	5.25	10.4%	18.8%	3.36	22,770
Deere & Company	38,941	13	6.3%	5.34	11.4%	6.2%	4.46	37,378
Hitachi Construction	9,480	10	-1.4%	5.34	5.3%	4.1%	0.25	6,107
Hyster-Yale Materials Handling Inc.	3,292	1	6.9%	5.60	3.2%	10.0%	1.87	887
Komatsu	24,582	3	3.9%	2.46	11.5%	7.6%	1.11	15,752
Konecranes Oyj	3,724	7	6.2%	2.60	6.0%	8.8%	0.90	1,009
Kubota	1,920	10	6.6%	3.54	10.8%	6.3%	1.62	16,166
Manitowoc	1,834	16	-4.8%	3.59	4.7%	-0.9%	0.95	615
Navistar	11,251	2	0.4%	7.60	2.5%	-11.0%	0.00	2,735
Oshkosh Truck	8,382	15	7.8%	6.34	7.8%	12.8%	2.01	4,100
PACCAR Inc.	25,600	4	14.4%	18.34	10.2%	8.8%	2.97	20,664
Terex Corporation	4,353	17	2.7%	3.48	4.8%	3.8%	1.77	2,888
Textron Inc.	13,630	5	2.8%	3.16	7.4%	7.1%	2.22	10,090
United Tractors	5,963	9	10.9%	5.71	15.8%	15.9%	2.48	6,985
Volvo AB	45,732	6	5.6%	5.21	7.2%	6.6%	0.73	9,847
MEAN WITH OUTLIERS			5.2%	5.35	8.0%	7.0%	1.91	13,294
MEAN WITHOUT OUTLIERS			5.2%	4.54	8.0%	7.4%	1.91	10,172

TABLE 31. Trucks and Heavy Equipment Sector Evaluation for the Period of 2010-2019

Process Industry Overview

Peer groups within the process industry focus on flow. The most serious degradation of results occurred in the process industry over the last decade. These industries have a strong dependency on oil prices. Process industries are large with a historical focus on manufacturing excellence. In Tables 32 and 33, we show the cut-off for each industry for the Supply Chain Index along with details of progress in the process industries.

	TOTAL	SUPPLY CHAIN INDEX CUT-OFF	WINNERS
Process			
Beverages	36	24	1
Chemical	42	28	1
Consumer Nondurables	11	7	1
Food	34	23	0
Paper and Plastics	19	13	0
Personal Products	0	0	1
Pharmaceuticals	34	23	1
Oil and Gas	47	31	2

TABLE 32. Overview of the Discrete Industry

	NUMBER OF COMPANIES	AVERAGE REVENUE (M$)	YEAR-OVER-YEAR GROWTH	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO TANGIBLE VALUE
PROCESS	AVERAGE FOR 2010-2019						
Pharmaceuticals	34	26,568	7.6%	2.36	20.4%	9.7%	5.53
Consumer Nondurables	11	18,618	1.9%	4.76	16.5%	14.5%	28.75
Beverages	36	10,070	5.6%	5.07	15.3%	9.6%	4.20
Oil & Gas	47	37,773	6.6%	14.94	11.5%	3.0%	1.71
Chemical	42	9,662	3.3%	4.74	11.1%	8.4%	2.31
Personal Products	15	8,262	3.4%	2.80	10.6%	10.5%	3.73
Containers and Packaging	34	7,649	6.5%	6.50	9.8%	6.9%	3.32
Food Manufacturing	19	12,236	5.2%	6.76	9.8%	7.1%	2.66

TABLE 33. Industry Averages for the Process Industry for the Period of 2010-2019

Beverages

Beverage companies are in intense competition for a "share of the throat." Interestingly, the best performance in the peer group is a relative newcomer Monster Beverages. Monster is a three-year winner placing in 2018-2020. While Boston Beer won in 2018, the Company bounced out of the Winner's Circle due to the lack of ability to manage complexity. Historically, start-ups and small companies have outperformed larger companies in this peer group.

INDUSTRY: BEVERAGES								
COMPANY INFORMATION			IMPROV.	PERFORMANCE			VALUE	
NAME	2019 REVENUE (M$)	SUPPLY CHAIN INDEX	GROWTH (YEAR OVER YEAR REVENUE)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAP
2010 - 2019								
Ambev	10,384	24	2.0%	4.31	38.3%	20.8%	12.24	170,112
Anheuser-Busch InBev	3,589	17	3.9%	5.83	31.2%	6.4%	3.35	159,108
Big Rock Brewers	153	30	-1.9%	5.54	2.6%	-0.8%	1.84	58
Boston Beer Company	9,782	19	12.2%	7.29	15.1%	24.8%	6.96	2,552
Brown-Forman	19,577	29	3.0%	1.03	32.2%	22.0%	10.98	18,714
Carlsberg	2,493	12	-0.9%	7.60	14.3%	4.5%	1.76	14,318
Coca-Cola	4,482	12	2.5%	5.38	24.2%	12.3%	7.35	183,690
Constellation Brands	66,404	1	10.5%	1.62	23.2%	9.9%	3.19	21,794
Craft Brewer Alliance	3,337	36	4.7%	8.79	1.2%	1.8%	2.04	240
Crimson Wine Group	6,297	18	12.3%	0.48	6.2%	1.5%	0.73	150
Davide Campari-Milano	4,590	22	4.2%	1.47	21.4%	7.0%	2.21	4,828
Diageo	13,895	15	1.2%	1.04	28.1%	13.3%	6.86	73,814
Embotelladora Andina	21,512	26	9.2%	8.76	12.6%	10.4%	3.04	3,752
Heineken International	9,273	32	2.8%	7.08	11.8%	6.5%	2.45	38,001
Keurig Dr Pepper	14,906	5	8.0%	10.81	19.2%	11.4%	4.86	17,735
Kirin Holdings	14,674	12	-2.8%	5.79	7.5%	4.5%	1.78	14,856
Lassonde Industries Inc.	4,610	4	13.2%	4.19	7.8%	7.9%	2.21	995
Long Blockchain Corp	6,244	31	14.6%	1.13	-82.1%	-92.6%	10.57	11
Mendocino Brewing	2,897	34	-1.0%	8.22	-0.3%	-3.4%	1.40	2
Mojo Organics	6,143	25	66.9%	3.49	-448.5%	-133.0%	31.33	8
Molson Coors Brewing	6,797	21	17.7%	9.68	11.9%	5.3%	1.39	12,890
Monster Beverage	5,140	8	14.1%	5.42	30.1%	29.6%	9.00	20,301
National Beverage	14,111	6	6.0%	10.15	13.4%	38.3%	8.66	1,876
New Age Beverages	4,557	2	148.7%	4.30	-13.4%	-79.5%	1.94	62
PepsiCo	3,855	15	5.0%	9.31	15.0%	14.6%	8.79	139,126
Pernod Ricard	10,087	28	0.7%	0.68	25.7%	6.3%	2.16	32,999
Primo Water Co.	1,804	19	7.1%	7.64	4.1%	2.7%	1.56	1,245
Remy Cointreau	7,615	11	3.0%	0.40	18.9%	7.1%	1.77	2,621
SkyPeople Fruit Juice Co.	5,959	35	-16.2%	10.30	-132.6%	-5.5%	0.25	39
Thai Beverage	34,727	10	11.8%	3.44	13.4%	13.9%	3.62	11,348
Tsingtao Brewery	13,376	23	4.8%	6.38	7.0%	10.9%	3.48	7,698
United Breweries	1,557	26	4.8%	4.14	14.4%	13.1%	2.98	4,430
Vitasoy International	10	9	8.8%	4.65	12.2%	17.8%	6.58	1,941
Vodka Brands	7,275	33	10.4%	0.13	-221.0%	-69.5%	0.00	6
Willamette Valley	15,146	3	8.7%	0.61	16.9%	5.7%	1.30	29
Yakult Honsha Co.	5,565	7	5.0%	5.46	8.8%	5.6%	1.26	3,750
MEAN WITH OUTLIERS			11.3%	5.07	-11.4%	-1.3%	4.78	26,808
MEAN WITHOUT OUTLIERS			5.6%	5.07	15.3%	9.6%	4.20	9,783

TABLE 30. Beverage Industry Performance and Sector Evaluation for the Period of 2010-2019

Chemical

Sitting three and four-levels back in the value chain, supply chain management is essential to a chemical company's success. Ecolab is the winner for 2019. No chemical company has sustained the Supply Chains to Admire winners status.

INDUSTRY: CHEMICAL								
COMPANY INFORMATION		IMPROV.	PERFORMANCE				VALUE	
NAME	2019 REVENUE (M$)	SUPPY CHAIN INDEX	GROWTH (YEAR OVER YEAR REVENUE)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAP
2010 - 2019								
Asahi Kasei Corp.	8,919	20	2.6%	4.15	7.6%	7.1%	1.20	11,908
Akzo Nobel	10,384	24	-4.5%	5.20	8.0%	9.5%	2.09	17,272
Albemarle Corp.	3,589	17	6.5%	3.83	18.9%	9.9%	2.88	7,095
Amyris Inc.	153	26	27.4%	8.40	-171.1%	-212.0%	43.93	379
Air Products and Chemicals Inc.	9,782	7	1.3%	12.89	18.5%	10.7%	3.46	28,135
Arkema SA	19,577	39	5.1%	0.44	10.1%	6.5%	1.58	6,491
Ashland Global Holdings	9,954	4	-9.3%	4.40	3.9%	3.7%	1.00	3,506
Axalta Coating Systems LTD	4,482	8	0.5%	4.09	7.8%	0.6%	3.29	3,940
BASF	66,404	32	1.0%	4.81	10.4%	11.7%	2.27	78,948
Cabot	3,337	9	5.0%	5.71	9.5%	5.0%	1.98	2,792
The Chemours Co.	6,297	40	-3.2%	3.85	10.5%	5.9%	3.90	2,204
Celanese Corporation	4,590	12	2.8%	6.22	12.4%	12.2%	4.56	10,021
CF Industries Holdings	13,895	31	8.2%	10.85	28.6%	10.7%	2.67	10,487
Covestro	21,512	18	1.0%	4.08	7.3%	10.3%	0.99	5,254
Dow Inc.	9,273	18	2.4%	4.86	7.7%	6.5%	1.43	47,031
Ecolab	14,906	11	11.3%	5.44	13.8%	9.1%	4.99	31,392
Eastman Chemical	14,674	36	8.4%	5.27	14.9%	10.5%	2.77	10,071
Evonik Industries	4,610	15	0.7%	5.40	10.5%	12.0%	0.48	4,507
FMC	6,244	21	7.1%	3.15	15.4%	11.1%	4.17	7,594
H.B. Fuller	2,897	35	9.5%	6.51	7.8%	6.4%	2.21	2,051
W.R. Grace	6,143	16	-2.0%	5.14	16.6%	11.9%	15.24	4,468
Givaudan	6,797	5	5.6%	3.14	15.8%	10.5%	4.63	16,296
Hitachi Chemical	5,140	27	2.7%	7.58	7.2%	7.2%	0.95	3,271
Huntsman Corporation	14,111	3	1.0%	5.38	8.1%	5.3%	2.39	4,646
International Flavors & Fragrances	4,557	13	8.6%	2.88	16.8%	12.1%	4.55	8,839
Johnson Matthey PLC	3,855	21	1.2%	14.41	4.1%	12.0%	1.38	3,907
K+S	10,087	38	1.0%	3.74	14.1%	7.5%	1.49	6,326
Kraton Performance Polymers	1,804	33	8.6%	3.22	6.4%	3.7%	1.58	821
Kansai Paint Co., Ltd	7,615	25	5.8%	5.21	9.0%	6.7%	0.40	985
Lanxess	34,727	29	2.0%	4.45	7.6%	8.4%	1.10	3,009
LyondellBasell	13,376	2	2.7%	7.17	12.8%	33.6%	3.86	33,303
Mitsui Chemicals Inc.	1,557	42	1.0%	4.47	3.6%	2.1%	0.20	990
Nitto Denko	7,275	14	2.6%	6.49	11.6%	10.3%	0.52	3,056
Nippon Kayaku	15,146	23	1.8%	2.74	13.1%	7.4%	0.31	564
PPG	5,565	1	1.0%	4.84	11.8%	16.0%	4.65	22,810
Koninklijke	1,323	6	1.0%	3.43	8.6%	7.0%	1.62	12,472
RPM International Inc.	12,569	10	5.2%	4.15	10.3%	8.1%	4.39	6,013
Stepan Company	1,859	37	4.3%	9.50	6.9%	10.4%	2.32	1,385
Solvay	3,815	30	2.6%	5.22	8.3%	5.3%	0.45	4,882
Sensient Technologies	5,526	33	1.1%	2.16	12.2%	7.5%	2.67	2,541
Symrise AG	1,958	28	7.3%	2.69	14.4%	9.0%	4.31	7,523
Wacker Chemie	5,516	40	1.2%	5.24	8.5%	6.8%	1.32	4,027
MEAN WITH OUTLIERS			3.6%	5.30	6.7%	3.7%	3.62	10,553
MEAN WITHOUT OUTLIERS			3.3%	4.74	11.1%	8.4%	2.31	8,188

TABLE 34.   Beverage Industry Performance and Sector Evaluation for the Period of 2010-2019

Consumer Non-Durables

In the post-recession period, the acquisition strategies of consumer non-durables companies failed to yield scale. The sizeable traditional consumer products companies of Colgate, Kimberly-Clark, P&G, and Unilever struggled to drive growth as smaller and more agile companies made progress.

INDUSTRY: HOUSEHOLD - NON-DURABLE								
COMPANY INFORMATION		IMPROV.	PERFORMANCE				VALUE	
NAME	2019 REVENUE (M$)	SUPPLY CHAIN INDEX	GROWTH (YEAR OVER YEAR REVENUE)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAP
2010 - 2019								
Church & Dwight Co.	4,358	3	5.7%	6.84	19.1%	13.8%	4.87	10,711
Clorox	6,214	7	1.3%	7.72	17.9%	23.7%	59.70	14,274
Colgate-Palmolive	15,693	5	0.3%	5.15	23.8%	31.4%	87.52	55,022
Energizer Holdings Inc.	2,495	1	2.5%	2.23	11.7%	5.9%	7.81	1,392
Kimberly-Clark	18,450	2	-0.3%	6.40	13.9%	19.6%	125.22	37,975
Newell Rubbermaid	9,715	11	6.9%	4.50	10.3%	2.7%	3.10	10,009
Procter & Gamble	67,684	4	-1.2%	6.46	19.4%	11.2%	3.88	222,713
Reckitt Benckiser Group	16,403	8	3.4%	4.88	26.0%	18.6%	4.24	46,786
Spectrum Brands Holdings	3,802	6	2.7%	3.82	8.3%	0.7%	2.74	2,070
Tupperware Brands	1,798	9	-1.4%	2.80	14.5%	13.8%	9.75	2,817
Unilever	58,192	10	0.6%	1.62	16.2%	17.7%	7.37	125,309
MEAN WITH OUTLIERS			1.9%	4.76	16.5%	14.5%	28.75	48,098
MEAN WITHOUT OUTLIERS			1.9%	4.76	16.5%	14.5%	28.75	34,041

TABLE 36.   Consumer Non-Durables Industry Performance and Sector Evaluation for the Period of 2010-2019

Containers and Packaging

In this peer group, there is no winner for 2020. While industry consolidation should show scale and performance improvements, this is not the case. The primary issue is the focus on functional excellence versus embracing holistic supply chain thinking.

INDUSTRY: CONTAINERS & PACKAGING							
COMPANY INFORMATION		IMPROV.	PERFERMANCE			VALUE	
NAME	2019 REVENUE (M$)	SUPPLY CHAIN INDEX	GROWTH (YEAR OVER YEAR REVENUE)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAP
2010 - 2019								
Amcor	9,458	4	3.5%	5.72	7.2%	7.6%	7.60	11,611
AptarGroup	2,860	11	4.7%	5.05	12.7%	9.6%	3.45	4,616
Ball Corporation	11,474	16	5.9%	6.54	9.9%	6.9%	5.61	10,810
Berry Plastics Group	8,878	1	8.0%	6.36	8.1%	2.7%	4.27	3,880
CCL Industries	5,321	19	17.0%	9.07	12.8%	9.6%	1.70	3,486
Crown Holdings	11,665	8	4.3%	5.73	10.9%	8.2%	22.57	6,619
Graphic Packaging Holding	6,160	7	4.7%	6.36	8.6%	5.3%	2.98	3,373
GREIF	4,595	6	5.8%	9.27	8.7%	5.8%	2.48	2,777
International Paper	22,376	10	-0.0%	6.68	9.2%	6.0%	3.19	18,183
Intertape Polymer Group	1,537	4	8.3%	5.36	7.3%	8.1%	3.10	853
Orora Ltd.	3,411	2	3.6%	3.79	2.7%	3.7%	0.48	550
Owens-Illinois	6,691	8	0.5%	5.39	9.9%	1.6%	5.13	3,461
Packaging Corporation of American	6,964	18	13.6%	6.88	13.6%	12.1%	3.92	6,674
Sealed Air	4,791	17	3.4%	6.10	11.9%	4.5%	6.19	6,436
Silgan Holdings	4,490	15	4.1%	5.64	9.3%	8.1%	4.18	2,986
Smurfit Kappa Group PLC	10,129	3	2.3%	7.62	9.5%	3.5%	1.43	4,018
Sonoco Products	5,374	13	4.2%	9.52	8.6%	8.6%	2.75	4,449
Westrock	18,289	14	23.1%	7.13	8.5%	5.6%	0.56	6,004
Winpak	874	11	5.7%	5.30	16.4%	13.8%	0.79	672
MEAN WITH OUTLIERS			6.5%	6.50	9.8%	6.9%	4.34	5,340
MEAN WITHOUT OUTLIERS			6.5%	6.50	9.8%	6.9%	3.32	5,637

TABLE 37. Containers and Packaging Industry Performance and Sector Evaluation for the Period of 2010-2019

Food

In the Supply Chains to Admire 2020 analysis, there are no winners in the food industry. While there were prior winners in the Food Industry—Ingredion in 2018, Hershey in 2017, and General Mills in 2014—there is no consistent performer. The issue? There were significant shifts in the food industry, but no company was equal to the challenge. Changes included the growth of generic products by retailers, a rise in commodity prices, and shifts to natural and organic food products.

INDUSTRY: FOOD								
COMPANY INFORMATION		IMPROV.	PERFORMANCE				VALUE	
NAME	2019 REVENUE (M$)	SUPPLY CHAIN INDEX	GROWTH (YEAR OVER YEAR REVENUE)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAP
2010 - 2019								
Archer Daniel Midland	64,656	22	-4.0%	6.39	3%	6.4%	1.29	23,727
B&G Foods	1,660	28	13.3%	3.73	18%	5.0%	3.59	1,703
Bunge Ltd	41,140	32	0.6%	8.61	2%	3.0%	1.32	9,889
Campbell Soup	8,107	12	1.5%	5.42	16%	13.5%	9.92	13,474
Charoen Pokaphan Foods PLC	17,147	20	15.0%	7.47	4%	5.7%	0.77	3,113
Clearwater Seafoods Inc.	616	3	8.1%	6.05	11%	0.7%	3.88	413
ConAgra Foods	9,538	24	-2.0%	5.11	10%	5.0%	2.53	12,207
Danone SA	2,831	19	3.4%	8.21	14%	7.7%	2.80	43,367
Dean Foods	7,329	34	-3.9%	23.78	2%	-7.0%	1.95	1,200
Ebro Foods SA	3,149	25	2.7%	2.95	11%	7.5%	0.85	1,840
Flowers Foods Inc.	4,124	29	4.9%	12.24	7%	9.8%	3.52	3,801
Fresh Del Monte Produce Inc.	4,489	17	2.6%	7.21	4%	4.3%	1.05	1,834
Freshpet	246	2	20.0%	6.99	-7%	-12.2%	4.31	514
General Mills	16,865	6	1.5%	6.94	17%	11.4%	5.35	29,759
Glanbia	4,339	9	6.5%	5.55	7%	11.8%	1.48	1,946
Golden Agri-Resources	6,432	26	13.4%	5.99	12%	5.3%	0.44	2,415
Grupo Lala SAB de CV	3,927	33	5.1%	8.65	9%	8.7%	0.61	832
Grupo Nutresa SA	3,045	31	153.6%	13.56	9%	11.5%	0.26	658
Hershey	7,986	8	4.2%	5.57	19%	21.2%	17.85	20,391
Hormel Foods	9,497	7	3.9%	7.51	11%	16.7%	3.75	15,394
Ingredion Incorporated	6,209	5	6.3%	6.42	11%	9.5%	2.58	6,183
Kellogg Co	13,578	21	0.9%	6.88	12%	10.7%	9.18	22,072
Maple Leaf Foods	2,970	1	-3.3%	11.43	3%	8.7%	1.22	1,821
McCormick	5,347	10	5.4%	3.74	15%	12.9%	5.47	11,677
Mondelez	25,868	4	-3.6%	5.74	12%	7.4%	2.03	58,555
Nestle	93,474	15	0.6%	5.23	16%	14.4%	3.72	232,025
Orkla ASA	4,956	18	-3.1%	3.18	11%	6.4%	1.34	5,747
Pilgrim's Pride Corporation	11,409	14	5.0%	8.34	7%	12.5%	3.14	4,740
Post Holdings Inc.	5,681	30	25.3%	6.86	12%	-1.7%	1.18	3,253
Smucker's	7,838	13	8.3%	4.39	16%	6.5%	1.79	11,350
The Hain Celestial Group Inc.	2,302	27	8.8%	4.90	9%	3.1%	2.25	3,257
The Kraft Heinz Co.	24,977	16	4.1%	5.77	18%	4.5%	0.68	38,107
Tree House Food Inc.	4,289	23	14.1%	4.92	7%	0.5%	1.69	2,808
Tyson Foods Inc.	42,405	10	4.9%	11.00	6%	9.3%	1.80	17,140
MEAN WITH OUTLIERS			9.5%	7.26	10%	7.1%	3.11	17,859
MEAN WITHOUT OUTLIERS			5.2%	6.76	10%	7.1%	2.66	11,369

TABLE 38. Food Manufacturing Sector Evaluation for the Period of 2010-2019

Personal Products

Nine years after the end of the recession, margins in this industry are the same as 2010, but there is increasing product complexity and shifts in the channel. L'Oréal is the industry winner for the fifth consecutive year. Estee Lauder was a winner in 2015.

PERSONAL PRODUCTS								
COMPANY INFORMATION		IMPROV.	PERFORMANCE				VALUE	
NAME	2019 REVENUE (M$)	SUPPLY CHAIN INDEX	GROWTH (YEAR-OVER-YEAR REVENUE)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAP
2010 - 2019								
Beiersdorf	8,568	2	0.8%	3.34	13.3%	13.7%	1.72	9,944
Coty	8,649	8	11.5%	2.64	7.6%	-2.8%	9.46	6,375
Estee Lauder	14,863	1	7.4%	1.82	15.2%	19.9%	9.17	34,752
Henkel AG & Company	22,518	6	1.9%	5.41	13.7%	11.5%	2.91	43,480
Herbalife Ltd.	4,877	7	8.2%	2.55	13.5%	31.3%	10.50	5,500
Inter Parfums	714	5	6.6%	1.74	12.9%	9.8%	2.81	1,106
Kao Corporation	13,784	14	-0.1%	4.37	11.0%	11.9%	1.65	11,477
L'Oreal	33,443	4	3.4%	2.93	17.3%	14.4%	3.76	102,326
Natures Sunshine Products	362	9	0.7%	2.17	4.7%	7.3%	1.96	218
Nu Skin Enterprises	2,420	10	7.8%	2.08	13.1%	19.4%	4.31	3,181
Ocean Bio-Chem Inc.	42	12	4.7%	2.56	9.0%	9.9%	1.33	27
PZ Cussons PLC	896	3	-3.3%	3.31	12.4%	8.7%	0.96	617
Revlon Inc.	2,420	11	7.0%	3.26	10.2%	9.8%	0.00	1,183
Shiseido Co Ltd.	10,382	12	5.3%	2.02	7.0%	5.3%	3.32	12,459
MEAN WITH OUTLIERS			4.4%	2.9	11.5%	12.2%	3.85	16,617
MEAN WITHOUT OUTLIERS			4.4%	2.9	11.5%	12.2%	3.85	16,617

TABLE 39. Personal Products Sector Evaluation for the Period of 2010-2019

Pharmaceuticals

The pharmaceutical industry stalled post-recession, accelerated improvement in the period of 2014-2018. For the first time in the history of Supply Chains to Admire analysis, there is a pharmaceutical winner. AbbVie pharmaceutical, a manufacturer of biologics, places into the winner's circle for the second consecutive year. The Company is a spin-off of Abbott Labs.

INDUSTRY: PHARMACEUTICAL								
COMPANY INFORMATION		IMPROV.	PERFORMANCE				VALUE	
NAME	2019 REVENUE (M$)	SUPPLY CHAIN INDEX	GROWTH (YEAR OVER YEAR REVENUE)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAP
2010 - 2019								
Abbott Laboratories	30,578	19	2.1%	3.39	11.6%	8.2%	2.87	75,612
AbbVie Inc.	32,753	7	9.0%	4.25	30.8%	17.1%	15.75	86,074
Acura Pharmaceuticals Inc.	4,131	17	29.8%	0.96	33.3%	10.7%	6.84	24,471
Alexion Pharmaceuticals Inc.	15,787	16	4.9%	1.34	36.9%	11.4%	5.29	100,239
Allergan PLC	167,940	27	12.8%	1.93	25.4%	9.0%	1.18	3,662
Amgen	3,332	9	2.1%	2.32	15.6%	11.5%	3.52	42,342
Aspen Pharmacare Holdings Ltd.	11,736	19	-2.7%	2.40	16.9%	12.4%	4.96	81,778
Astellas Pharma Inc.	22,090	23	1.7%	2.24	11.8%	8.5%	2.86	85,588
AstraZeneca PLC	46,744	25	13.1%	1.58	41.3%	21.5%	5.01	50,249
Bayer	13,453	13	18.2%	0.59	-15.9%	-4.1%	5.96	11,388
Biogen Idec Inc.	22,561	8	3.8%	3.65	20.8%	12.3%	5.25	88,228
Biomarin Pharmaceutical Inc.	2,463	33	5.3%	6.35	11.6%	2.2%	3.06	2,816
Bristol-Myers Squibb Co.	15,281	2	0.6%	2.01	13.1%	6.3%	1.44	15,650
Catalent Inc.	8,666	1	0.5%	1.63	20.5%	18.0%	9.71	79,418
Celgene Corp.	24,556	12	-0.2%	1.96	19.8%	15.1%	67.53	104,990
Daiichi Sankyo Co Ltd.	41,123	24	7.2%	2.52	19.4%	10.1%	3.18	5,015
Eli Lilly and Company	81,581	19	2.9%	2.97	26.3%	15.0%	4.22	279,369
GlaxoSmithKline	3,216	28	6.8%	2.96	10.9%	-2.4%	0.82	3,172
Johnson & Johnson	42,294	29	7.1%	2.75	17.7%	8.6%	4.01	154,913
Mallinckrodt PLC	11,434	9	8.7%	2.64	13.5%	4.4%	2.86	16,064
Merck and Company	53,166	4	1.2%	2.51	19.6%	11.1%	2.63	183,052
Mylan NV	17,715	32	6.8%	1.27	39.7%	64.2%	14.81	106,678
Novartis AG	4,732	14	12.6%	3.38	14.5%	2.9%	2.74	12,595
Novo Nordisk A/S	53,647	14	0.9%	1.58	27.7%	11.1%	2.81	195,977
Perrigo Co PLC	6,711	22	43.0%	1.23	19.0%	16.2%	10.07	31,221
Pfizer, Inc.	58,111	17	3.2%	2.30	29.1%	21.9%	10.68	204,910
Regeneron Pharmaceuticals Inc.	42,128	26	0.0%	1.68	20.9%	6.8%	1.64	113,038
Roche Holding	18,854	11	7.7%	2.60	23.5%	12.8%	2.67	5,665
Sanofi S.A.	1,628	30	2.5%	2.00	20.8%	1.0%	1.48	34,059
Teva Pharmaceutical Industries Limited	3,048	31	16.0%	1.74	39.6%	21.0%	3.26	4,913
United Therapeutics Corp.	5,825	3	110.8%	3.50	-56.7%	-10.1%	16.56	25,541
Vertex Pharmaceuticals Inc.	4,160	5	8.8%	1.31	22.8%	10.8%	13.25	22,725
Zoetis Inc.	5,307	6	6.0%	1.30	22%	10%	12.14	18,257
MEAN WITH OUTLIERS			10.7%	2.33	19%	11%	7.61	68,778
MEAN WITHOUT OUTLIERS			8%	2.36	20%	10%	5.53	70,357

TABLE 40. Pharmaceuticals Sector Evaluation for the Period of 2010-2019

RESEARCH METHODOLOGY

Year-over-year, the Supply Chains to Admire methodology continues to evolve. Each year we review and refine the process based on feedback from supply chain business leaders. This year, there were intense discussions on which period to use. We decided to focus on the period of 2010-2019 to help companies see the pattern of the entire decade.

CALCULATIONS

The methodology used to define the 2020 winners outlined in this report is as follows:

1. Determine Industry Peer Groups. We started by placing companies into industry peer groups (based on prior work, we have found NAICS and SIC codes to be inadequate). After much debate, we defined 28 peer groups, assigned companies to their respective industry sectors, and started the analysis for 440 public companies. There is no such thing as a perfect peer group.

2. Define Timeframe. The next step was to determine the appropriate period. Since it takes at least three years for supply chain leaders to translate strategy to balance sheet results, and project outputs are often hard to sustain, we selected the 2010-2019 time period. Our goal was to understand post-recessionary trends.

3. Identify the Metrics for Comparison. The third step was to identify the metrics to be collected and analyzed. In this analysis, we selected two value metrics (Market Capitalization and Price to Book Value (PTBV)) and four performance metrics (Growth, Operating Margin, Inventory Turns, and Return on Invested Capital (ROIC)). Our goal to move supply chain leaders from a cost to value focus. Based on prior research, we

know that the performance metrics selected have the highest correlation to market capitalization.

4. Start the Analysis. To complete the analysis, we collected publicly available data from balance sheets and income statements. For this analysis, we used YCharts, a syndicated data provider of the balance sheet, and income statement data. We only included companies that had at least one data point across all of the metrics in the period selected.

5. Defining Improvement. The base principle of this analysis is that supply chain winners drive improvement while also outperforming their peer group. As will be seen, this is hard to do. Our first calculation was defining improvement on balance sheet performance as compared to the peer group. To accomplish this goal, we calculated each Company's Supply Chain Index Ranking, a measurement of supply chain improvement based on balance, strength, and resiliency. Companies are then stack ranked within a peer group and assigned an overall ranking based on the relative level of improvement. The lower the rank number, the higher the level of maturity When companies tied, each Company received the same ranking.

6. Analyzing Performance. For each metric chosen,

Supply Chains to Admire™ 2020

Retail (3)	Dollar Tree · TJX · Ahold
Process (5)	Reckitt Benckiser · L'ORÉAL · MONSTER BEVERAGE CORPORATION · abbvie · ECOLAB
Discrete (14)	tsmc · LOCKHEED MARTIN · BROADCOM · ut · SAMSUNG · sleep number · VF · ASSA ABLOY · iRobot · TORO · BorgWarner · PACCAR Inc · ResMed · Rockwell Automation

we calculated the mean, adjusted for outliers, and analyzed the pattern over the period. We then compared each Company's statistical mean to that of the industry peer group.

7. Define Winners. Our final step was to determine winners based on the criteria of improvement, value, and performance.

To understand the methodology completely, it is essential to note what the mehtodology does not include:

- This analysis does not include private companies or companies trading only on Chinese and Korean stock exchanges.

- Companies with issues on reporting during the period (M&A), or public offerings, are excluded from the analysis.

- We excluded companies that did not have at least one data point for each metric across the time period studied.

- The research is a focused look at the retail, distribution, and manufacturing companies and does not include financial, insurance, or service sectors.

- Within each industry, there are metrics we consider to be essential but feel that there is no good source of data. This is the case for customer service metrics. While we firmly believe that the analysis should include customer service in the performance metrics, we cannot find a reliable data source.

THE CRITERIA

Connecting supply chain performance to balance sheet information can be gnarly and confusing. We detail the steps in Figures 5 and 6 to help the reader better understand the process.

COMPANY	IMPROVE-MENT	VALUE		PERFORMANCE				RESULTS
	SUPPLY CHAIN INDEX RANK	MARKET CAP	PRICE TO TANGIBLE BOOK VALUE	GROWTH	OPERATING MARGIN	INVENTORY TURNS	ROIC	
Co A	7 (max=18)	$5,267	6.5	16.7%	0.12	6.9	11.3%	WINNER
Co B	13	$3,960	0.2	4.3%	0.08	9.8	8.8%	
Co C	6	$2,658	2.5	6.7%	0.06	6.2	1.5%	
...and so on								
MEAN	5.9%	$4,227	3.4	5.9%	0.09	6.7	7.0%	
Allowable % from mean (within the margin of error)	NA	-12.6%	-26.5%	-13.0%	-7.3%	-18.6%	-8.7%	
GREEN = Meeting requirement to qualify as a winner								

TABLE 35. Calculation Example

In this report, we share our data openly to help all supply chain leaders. As with most comparisons, the devil is in the details:

WINNER ANALYSIS: The methodology is not limited to the best Company in the peer group. Within a peer group, there can be multiple winners. There is also a possibility of the peer group having no winners. In this year's analysis, there are no winners for ten of the 28 industries.

PEER GROUP ANALYSIS: The analysis is within single industry peer groups only. There is no stacked ranking across multiple peer groups. We believe that comparison across industries is "fools play" because the industries are so different. Industry Peer Group Means: In calculating the industry peer group mean for the value metrics (Market Capitalization and Price to Book Value), we removed outliers.

MARGIN OF ERROR: To determine the allowable distances from the industry peer group mean for the value and performance metrics (Market Capitalization,

Price to Tangible Book Value, Growth, Inventory Turns, Operating Margin and Return on Invested Capital), we calculated the margin of error (at a 95% level of confidence, excluding outliers) for each metric among all companies in the analysis. We then allowed "winners" to be within the equivalent of one margin of error of the mean.

SUPPLY CHAIN INDEX: The Supply Chain Index is a ranking within an industry peer group across three measurements:
1. BALANCE - vector analysis of the rate of change at the intersection of Return on Invested Capital & Revenue Growth for the period
2. STRENGTH - vector analysis of the rate of change at the intersection of Inventory Turns & Operating Margin)
3. RESILIENCY -the tightness of the pattern at the intersection of Inventory Turns & Operating Margin as measured by the mean distance of years on an orbit chart.

ABOUT LORA CECERE

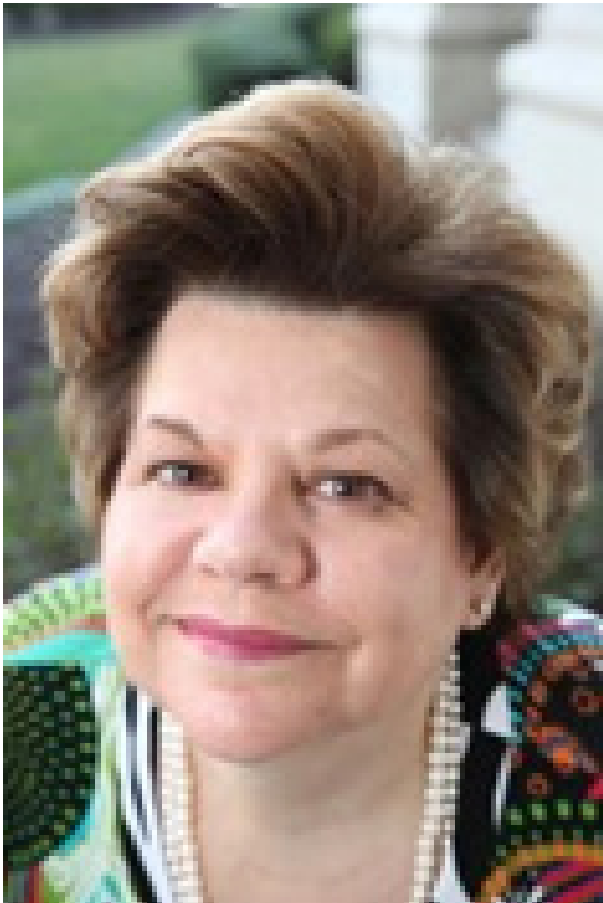LORA CECERE (twitter I.D. @lcecere) is the Founder of Supply Chain Insights LLC, and the author of popular enterprise software blog Supply Chain Shaman currently read by 18,000 supply chain professionals. She also writes as a Linkedin Influencer and is a contributor to Forbes. She has written seven books. The first book, Bricks Matter, (co-authored with Charlie Chase) published in 2012, and the second book Supply Chain Metrics That Matter, published in December 2014. In addition, Lora publishes an e-book of best-read blog posts each year in a self-published book series, The Shaman's Journal. This series published annually between 2014 and 2019.

With over eighteen years as a research analyst first with AMR Research, Altimeter Group, and Gartner Group and now as the Founder of Supply Chain Insights, Lora understands supply chain management. She has worked with over 600 companies on their supply chain strategy and is a frequent speaker on the evolution of supply chain processes and technologies. Her research is designed for the early adopter seeking first-mover advantage.

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