



# Supply Chains To Admire™

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# 2022

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 Supply Chain Insights™



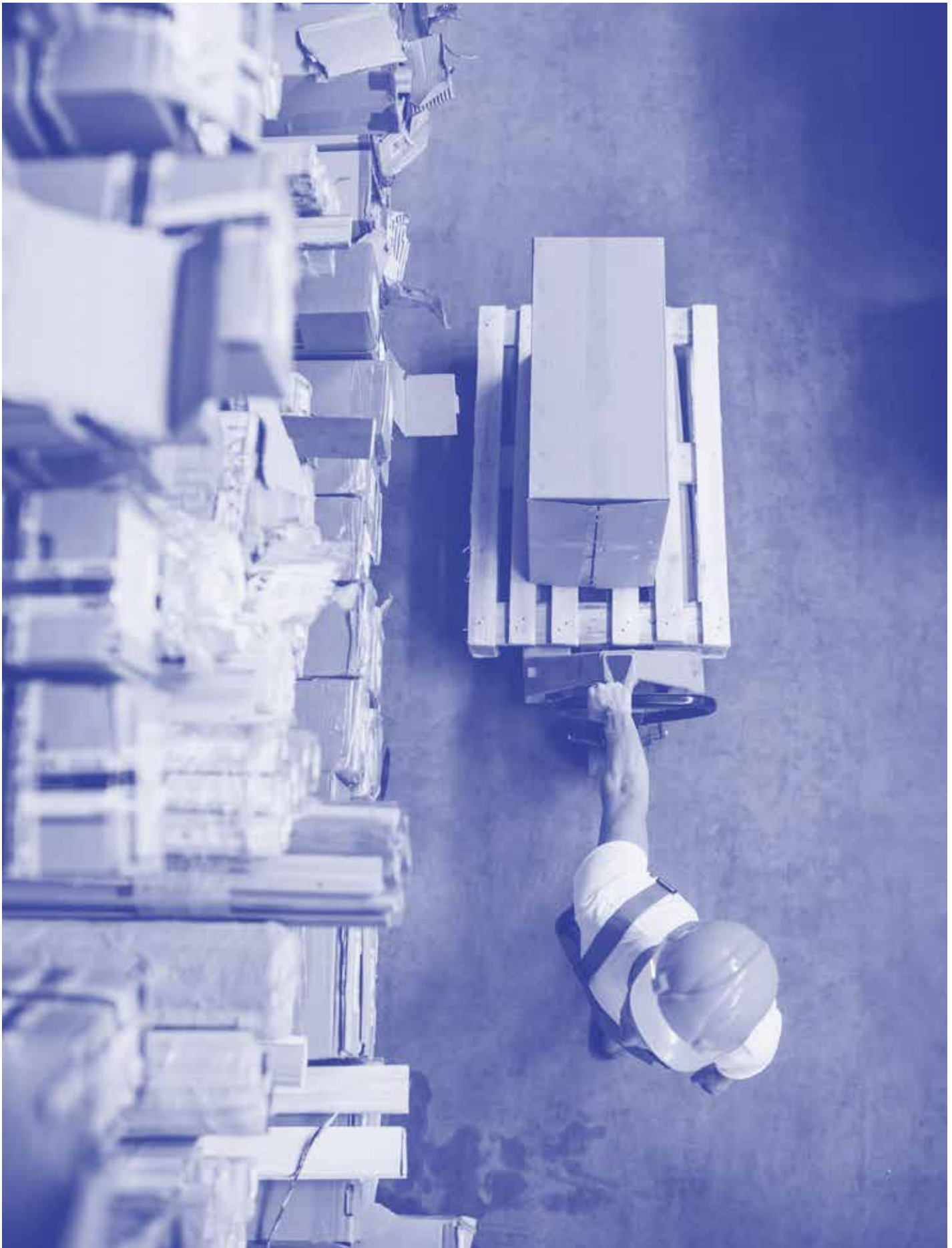
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# Disclosure

Your trust is important to us. As such, we are open and transparent about our financial relationships and our research processes. This independent research is 100% funded by Supply Chain Insights.

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# Executive Summary

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

The Supply Chains to Admire™ methodology evaluates the progress of public companies over ten years. The analysis includes over four hundred and sixty public companies within twenty-eight industry sectors. The annual report is designed to serve several goals:

1. Guide supply chain leaders in setting realistic supply chain goals.
2. Provide industry benchmarks by industry peer group.
3. Reward companies that are achieving higher levels of supply chain excellence.

**METHODOLOGY OVERVIEW**

Supply Chain Insights completes the Supply Chains to Admire™ of supply chain excellence annually. Now in its ninth year, the methodology measures industry sector performance for the period of 2012-2021. Within each peer group, we track the year-over-year patterns for publicly-held companies in the three areas of improvement, performance, and value.

4. Provide a clear definition of supply chain excellence for the Supply Chain Insights research. (The analysis enables an explicit objective function for correlation to understand how the choices made by supply chain leaders tie to value.)

5. Gain an understanding of what is achievable by companies in the execution of multi-year roadmaps

In the 2022 analysis, twenty-two companies meet the **Supply Chains to Admire Award** criteria for improvement, performance, and value. The winners include Apple, AbbVie Inc., Assa Abloy AB, Ametek, Broadcom, CCL Industries, Celanese, Clorox, Intuitive Surgical, Hubble, Lockheed Martin Corporation, Koninklijke Ahold Delhaize NV, Monster Beverages, Nike Inc., Northrup Grumman, PACCAR Inc, ResMed, Ross Stores, Sleep Number, Subaru, Taiwan Semiconductor Manufacturing (TSMC)

Figure 1. Supply Chains to Admire Winners for 2022



Company, and Toro. No company met the criteria in eleven of the twenty-eight sectors studied.

When we compare the list of Supply Chain to Admire Award Winners to the conventional wisdom of industry leaders, there is a stark difference. While some like Apple and Nike are commonly accepted supply chain leaders, the performance and recognition of other companies on the list are not. In addition, many companies touted as supply chain leaders—BASF, Cisco, Colgate, General Mills, Intel, J&J, and P&G—do not make the cut of outperforming their peer group on improvement, performance and driving value. Industry leaders are positively biased toward the performance of large brand companies in the process and retail sectors. While many of these companies were supply chain leaders outperforming their peer groups

twenty years ago, today, they underperform against the industry averages. The story of shifts in the market carries lessons for all.

Since the Supply Chains to Admire is a data-driven analysis, it is less subject to type of industry bias. The basis is public reporting in global markets. We obtained the information to start the report through a syndicated data provider, [YCharts](#). As a result, the Supply Chains to Admire methodology is a valuable assessment tool for companies of all sizes and regions.

In this report, we share the background on the analysis and celebrate the achievements of leaders. ❁



# What is the Right Stuff?

Supply chain excellence is easier 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 2012-2021 period. The analysis tracks year-over-year progress on the metrics: year-over-year growth, operating margin, inventory turns, and return on invested capital. The study focuses on moving the supply chain excellence from a cost-based focus to margin-driven performance.

While the companies, over the nine years of the analysis, vary by year, the win rate remains constant at 4%. The path to excellence for supply chain leaders takes four-to-five years, and the most critical factor is leadership. Our research finds no correlation to performance based on technology or consultant selection. We also find an adverse impact of IT standardization and outsourcing.

Winning is not magic. Leaders drive higher levels of improvement by focusing on cross-functional process development and organizational alignment.

Historically, the focus has been on building efficient selling, delivering, making, and sourcing processes. The organization

is thrown out of balance when companies are marketing-driven or sales-driven. We also find that large organizations focused on functional metrics throw the supply chain out of balance and do not make it into the Winner's Circle. From our research, it is clear that a focus on efficient organization-optimizes overall corporate performance.

**WHY OPERATING MARGIN VERSUS TOTAL COST?**

A focus on cost throws the supply chain out of balance increasing inventories. In contrast, an organizational focus on margin helps organizations to better align on channel programs and new product launch.

Supply chain leaders quickly find it easier to drive improvement than sustain performance. Progress requires patience and building capabilities to manage the supply chain as a complex nonlinear system based on a multi-year roadmap.

Let's take Ecolab as an example. Companies can drive improvement and achieve peer group performance through an infusion of leadership but that relative positions can quickly shift when management teams change. In 2013, Alex Blanco, became SVP of Supply Chain for Ecolab. He left in 2020. Over the nine years of the Supply Chains to Admire, we tracked Ecolab as they became a Supply Chain to Admire award winner in 2020 and 2021, and then fall out of the winner's circle in 2022. (Posted ROIC results below the peer group on a downward slide for the past three years.)

In Figure 2, we show the progress of Ecolab against the industry in the period of 2013-2019 and the slight slide in 2020 and 2021.



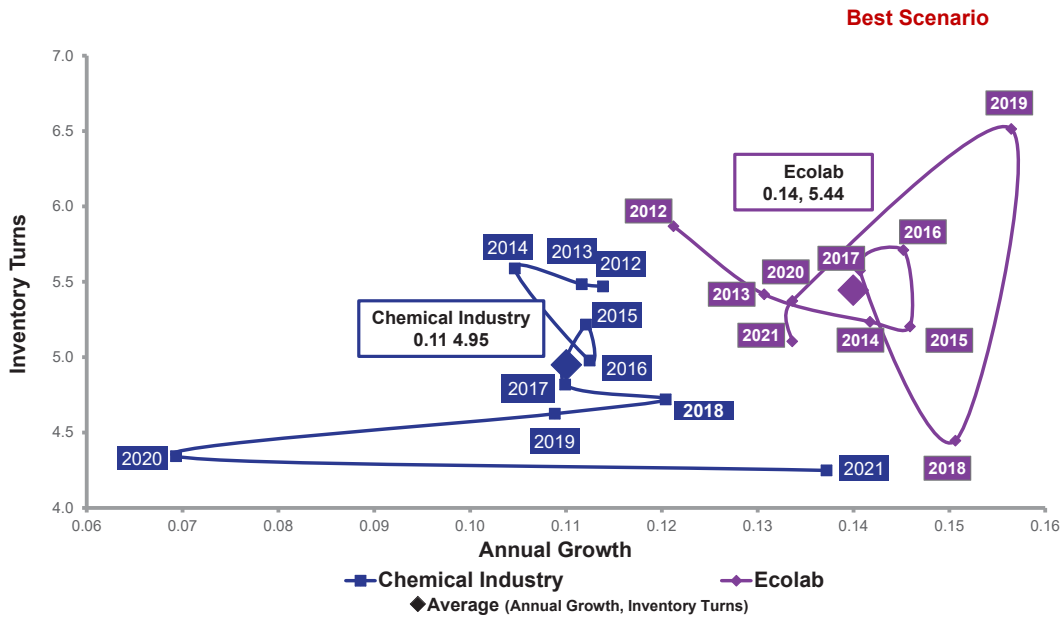
The presence of the new executive team with deep experience in 2013 led the rise in capabilities. Was Alex's departure the reason for the fall? Probably not the sole factor. Supply Chain Excellence is a combination of factors, but performance is hard to sustain through management changes.

There are many barriers to beating the peer group in the areas of improvement, performance, and value.

Smaller innovative and newer companies focusing on customer value tend to win the Supply Chains to Admire award. Examples of smaller innovative companies winning the award include AbbVie, Intuitive Surgical, and Sleep Number. The retail winners drove excellence through constant change and business model innovation.

Companies following traditional supply chain practices focused on transactional efficiency do not make the cut to place in the Winner's Circle. The use of functional metrics and close coupling of the supply chain to the budget is a barrier to improving balance sheet improvement. (In contrast, the budget is input but not a constraint for winners.) A worst-case scenario is defining the supply chain as another function within a rigid set of silos. The supply chain function is a more significant issue in Europe than in the Americas. ❁

Figure 2. Orbit Chart: Ecolab Progress Against Peer Group



Source: Supply Chain Insights LLC, Corporate Annual Reports 2006-2021 from YCharts



# Driving Progress by Conquering The Effective Frontier

The supply chain is a complex, nonlinear system. Globalization increased both complexity and non-linearity. In 2012, Supply Chain Insights worked with Arizona State University to determine the most appropriate 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 and Return on Invested Capital (ROIC) for the balanced scorecard analysis. We call this balanced scorecard, as shown in Figure 3, the Effective Frontier.

While we wish to 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 drive higher performance levels within a peer group and sustain this competitive advantage over time. Using the Supply Chains to Admire analysis,

in Table 1, we show consecutive year winners.

**Figure 3. The Approach: Balanced Scorecard Analysis**



Over the eight years of analysis, fewer process manufacturers and retailers qualify for the Supply Chains to Admire recognition. We observe that discrete manufacturers are smaller and more agile, less likely to struggle with product complexity, and more aligned. In contrast, process industries tied to conventional marketing practices introduce complexity through product proliferation. These marketing programs, in addition, tend to shift and distort demand versus shaping demand by improving market potential (baseline lift). Shifting demand decimates margin. The more significant the alignment gap between operational and commercial teams, the lower the company's position in the sector.

Marketing-driven organizations handicap process companies, which are no substitute for market-driven planning capabilities. Mergers and Acquisitions (M&A) activity in the decade was more significant in process-based companies. No industry sector successfully achieved economy of scale in delivering supply chain performance.

Within process-based companies, manufacturing processes became more global, increasing logistics complexity and burgeoning in-transit inventories. The average company entered the pandemic of 2020 with twenty more days of Inventory than at the beginning of the great recession in 2007. Today, companies face inventory sell-offs while facing inflationary pressures.

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. There are too few companies to drive a good peer group for comparison, thus eliminating the inclusion in the analysis. ❄️

**Table 1. Winners Over Time**

Winners Over Time		
COMPANY	FREQUENCY	THIS YEAR
Apple	8	Y
L'Oréal	6	N
Broadcom	6	Y
TSMC	6	Y
Dollar General	5	N
Nike	5	Y
TJX	5	N
Paccar	5	Y
Dollar Tree	4	N
Ross Stores	4	Y
Eastman	4	N
Sleep Number	4	Y
Abbvie	3	Y
Asso Abloy	3	Y
Celanese	3	Y
Clorox	3	Y
Intuitive Surgical	3	Y
Koninklijke Ahold Delhaize NV	3	Y
Monster Beverages	3	Y
ResMed	3	Y
Toro	3	Y

**Table 2. Consecutive Year Winners for the Supply Chains to Admire Year-over-Year**

Supply Chains to Admire Summary									
Sector	Year								
	2014	2015	2016	2017	2018	2019	2020	2021	2022
Retail	2	6	6	4	9	5	3	3	2
Process	4	5	3	4	11	6	5	4	5
Discrete	12	23	16	24	31	25	14	13	15
Sum	18	34	25	32	51	36	22	20	22

# Comparison of Methodologies

Client requests initiated the development of 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, allowing comparisons of large and small companies across currencies. The goal was to understand the relative positions of companies within industry peer groups. Shown in Table 3 is a comparison of the two approaches.

For the 2022 analysis, AbbVie, Apple, and Nike are the only three companies that meet the criteria for these two very different comparisons. As shown in Table 4, The Gartner methodology biases underperforming companies on growth, inventory management and asset utilization. The process lacks a peer group comparison. Instead, in the Gartner work, all companies are compared without a reference to industry sector performance. ❄️

**Table 3. Comparison of Methodologies**

Comparison of Methodologies		
Comparison	Gartner Top 25	Supply Chains to Admire™
<b>Focus</b>	Fortune Global 500 and Forbes 2000 lists. 12 \$B minimum annual revenue. (roughly 300 companies)	All public companies analyzed by industry peer groups. 480 companies by 26 peer groups. No revenue minimum for consideration.  No limit on the number of winners by peer group. Likewise, there may be no winner by industry.
<b>Analysis</b>	2018-2021	2012-2021
<b>Calculation</b>	<p><b>50% Opinion:</b> (Equally split between analyst and peer voting)</p> <p><b>50% Quantitative Analysis:</b></p> <ol style="list-style-type: none"> <li>Return on Plant Assets (ROPA): <math>\left(\frac{2021 \text{ operating income}}{2021 \text{ net property, plant, equipment} + \text{year-end inventory}} \times 50\% + \left\{\left(\frac{2020 \text{ operating income}}{2020 \text{ net property, plant, equipment} + \text{year-end inventory}}\right) \times 30\% + \left(\frac{2019 \text{ operating income}}{2019 \text{ net property, plant, equipment} + \text{year-end inventory}}\right) \times 20\%\right\}\right)</math></li> <li>Inventory (Average for 2019-2021) 5%</li> <li>Revenue Growth: <math>\left(\frac{\text{change in revenue } 2021-2020}{\text{revenue } 2020-2019} \times 50\% + \left(\frac{\text{change in revenue } 2020-2019}{\text{revenue } 2019-2018} \times 30\% + \left(\frac{\text{change in revenue } 2019-2018}{\text{revenue } 2018-2017} \times 20\%\right) \times 10\%\right)</math></li> <li>ESG Component Score: Index of third-party environmental, social, and governance easures of commitment, transparency, and performance</li> </ol>	<p><b>Improvement:</b> Top 2/3 ranking on the Supply Chain Index.</p> <p><b>Performance:</b> At or above the industry mean for:</p> <ul style="list-style-type: none"> <li>Year-over-year revenue growth.</li> <li>Operating margin.</li> <li>Inventory turns.</li> <li>Return on Invested Capital (ROIC).</li> </ul> <p><b>Value:</b> At or above the mean for Price-to-Tangible Book or Market Capitalization.</p> <p><small>Index Calculations: <a href="https://www.slideshare.net/loracecere/sci-summit-2014-math-behind-sc-index?qid=27326733-0325-4ee7-aacd-e2827bd216de&amp;v=&amp;b=&amp;from_search=11">https://www.slideshare.net/loracecere/sci-summit-2014-math-behind-sc-index?qid=27326733-0325-4ee7-aacd-e2827bd216de&amp;v=&amp;b=&amp;from_search=11</a></small></p>
<b>History</b>	18 <sup>th</sup> Year	9 <sup>th</sup> Year

Table 4. Comparison of the Gartner Top 25 to the Supply Chains to Admire

Comparison of the Gartner Top 25 to the Supply Chains to Admire										
	Company Metrics					Industry Peer Group				
	Growth	Margin	Inventory Turns	ROIC	Price to Book	Growth	Margin	Inventory Turns	ROIC	Price to Book
Amazon	25.7%	0.03	10.89	9.4%	17.44	26.0%	0.14	38.95	14.3%	8.03
Apple	14.0%	0.28	52.99	30.9%	12.35	2.9%	0.06	8.00	7.0%	2.61
Procter & Gamble	-0.5%	0.20	6.60	12.1%	4.92	2.0%	0.16	4.92	14.0%	29.96
McDonalds	-1.2%	0.35	182.28	19.7%	3.39	4.9%	0.14	83.03	18.5%	17.05
Unilever	-0.4%	0.16	5.51	7.7%	7.75	2.0%	0.16	4.92	14.0%	29.96
Cisco	1.5%	0.25	12.32	12.8%	3.57	4.0%	0.12	12.01	10.1%	4.33
Schneider	1.3%	0.14	5.14	7.2%	2.19	1.9%	0.14	4.95	9.2%	3.58
Colgate	0.5%	0.24	4.90	30.1%	105.92	2.0%	0.16	4.92	14.0%	29.96
Johnson & Johnson	3.8%	0.26	2.89	15.4%	14.46	6.8%	0.21	2.61	12.8%	8.10
PepsiCo	1.9%	0.15	9.31	14.2%	10.88	4.7%	0.17	5.42	10.4%	4.77
Pfizer	6.1%	0.25	1.62	12.6%	3.09	6.8%	0.21	2.61	12.8%	8.10
Intel	4.0%	0.28	4.01	16.0%	2.66	11.8%	0.15	4.48	10.2%	4.23
Nestle	0.2%	0.16	5.00	12.3%	4.43	5.9%	0.10	6.27	7.1%	3.44
Lenovo	11.5%	0.02	12.96	11.2%	2.88	3.2%	0.07	8.26	7.5%	2.80
Microsoft	9.3%	0.34	15.71	20.5%	7.89	3.2%	0.07	8.26	7.5%	2.80
L'Oreal	3.3%	0.18	2.85	14.8%	4.48	3.5%	0.11	2.76	10.4%	4.13
Coca-Cola	1.5%	0.25	5.18	10.9%	8.72	4.7%	0.17	5.42	10.4%	4.77
Nike	8.4%	0.13	3.74	24.2%	11.02	6.4%	0.11	2.94	13.0%	6.06
Wal-Mart	2.9%	0.05	8.43	10.8%	3.75	4.2%	0.06	5.20	13.5%	4.53
Hewlett Packard	-4.8%	0.07	9.02	47.3%	0.35	3.2%	0.07	8.26	7.5%	2.80
Diageo	1.1%	0.28	0.96	12.4%	7.84	4.7%	0.17	5.42	10.4%	4.77
Dell	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Inditex	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
AbbVie	12.9%	0.31	4.22	16.4%	18.75	6.8%	0.21	2.61	12.8%	8.10
British American Tobacco	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Astrazeneca	2.1%	0.12	1.97	7.8%	5.72	6.8%	0.21	2.61	12.8%	8.10
Siemens	-2.1%	0.09	3.80	8.1%	2.32	1.9%	0.14	4.95	9.2%	3.58
General Mills	2.1%	0.17	7.17	10.3%	5.40	5.9%	0.10	6.27	7.1%	3.44
BMW	3.3%	0.10	6.09	8.1%	1.17	7.3%	0.05	6.84	4.9%	3.09
Alibaba	65.2%	0.27	5.84	19.3%	5.00	26.0%	0.14	38.95	14.3%	8.03

# Trends and Insights

We found commonalities and similar patterns in our prior interviews with companies making the Supply Chains to Admire list. Leaders have five characteristics. We share these in Table 5.

**Table 5.** Characteristics of Supply Chains to Admire Leaders

Outperforming Companies Are More Likely to be:	Underperforming Companies Are More Likely to:
More aligned organizationally. Smaller gaps between Commercial and Operations teams and Finance and Operations.	Embrace IT standardization.
Smaller and younger organizations.	Believe that traditional practices are "best practices."
Product innovators in their sectors.	Reward functional behavior with less clarity on corporate governance.
Driving process innovation agendas.	Be more dependent on services outsourcing.
Actively designing supply chain flows.	Have attempted to grow through M&A.
Focused on managing complexity and aligning the organization in Sales and Operations Planning (S&OP).	Focus on tight integration of the budget to supply chain flows in S&OP.
Recognizing and managing supply chain flows based on rhythms and cycles. Not treating all products are treated the same.	Manage the supply chain as a homogeneous process—treating all items the same.

Winning companies have longer tenure of their leadership teams, focusing on driving 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. In business, there is both good and bad complexity. It is analogous to cholesterol. Good complexity increases market share and drives growth with a minimal impact on margin, while bad complexity does not improve share but has a significant detrimental effect on margin. Leaders actively manage complexity through 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. These cross-functional programs align strategy with execution. Through the processes, there is a conscious choice to manage and actively reduce bad complexity through cross-functional processes.

The issue? Only 1/3 of companies have a supplier development program, and more S&OP processes are out of alignment (65%) than aligned organizationally. New product launch and Corporate Social Responsibility programs all have great aspirations, but operate in silos.

The gap in performance between process-based and discrete industries widened over the last decade. The smaller discrete companies started strong and developed even stronger supply chain practices in the face of declining margins. The strongest S&OP, NPI, and supplier development processes are in fast-moving discrete industries. We feel this is one of the reasons many process-based companies are regressing on the Supply Chain Metrics That Matter. ❁

# A Closer Look at Supply Chains to Admire Results by Industry

At the start of this analysis, we start by mapping industry trends. Supply chain practices grew in importance as the margins of 85% of the industry sectors regressed over the last decade. Without the supply chain's redesign, companies cannot drive progress based on traditional process paradigms.


Inventory is a sticky wicket—a political hot potato—in many organizations. Inventory levels at the end of 2021 were significantly higher across industries than pre-recession levels in 2007. Today, many companies have burgeoning inventories; but lack the right product to ship orders reliably. They are drowning in inventory, decreasing cash-to-cash performance, but have the wrong products to ship orders. This is due to the lack of evolution of processes to manage inventory holistically. Winners focus on the design of inventory strategies while most companies, often laggards, only focus on safety stock levels. The lack of performance in inventory optimization is a significant factor in determining the winners in the Supply Chains to Admire Award process.

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

When we started this analysis, we believed the analysis would favor the iconic brands of Procter & Gamble, Unilever, or Walmart. While each company contributed significantly to supply chain process improvement, in this study, each struggled to outperform its peer group on the balanced scorecard selected for this analysis. 🌟

**Table 6.** Inventory Levels by Industry Sector Across Time Periods

Days of Inventory by Industry: Comparison across Years						
Industries	Years					Difference (2020 - 2021 vs 2004 - 2006)
	2004 - 2006	2007 - 2008	2009 - 2013	2014 - 2019	2020 - 2021	
Beverage	95	98	114	160	153	57
Pharmaceuticals	146	135	158	184	182	36
Medical Device	100	107	120	129	145	44
Beauty	105	127	132	142	147	42
Automotive Parts	47	52	61	66	76	29
Household Products	50	51	57	74	78	29
Aerospace & Defense	94	89	97	103	122	28
Apparel Retail	62	65	66	69	83	21
Chemical	58	54	59	73	77	19
Semiconductor	61	69	80	92	76	15
Automotive	37	41	43	48	51	14
Food	50	51	57	59	61	11
Broadline Retail	65	62	63	66	59	-5



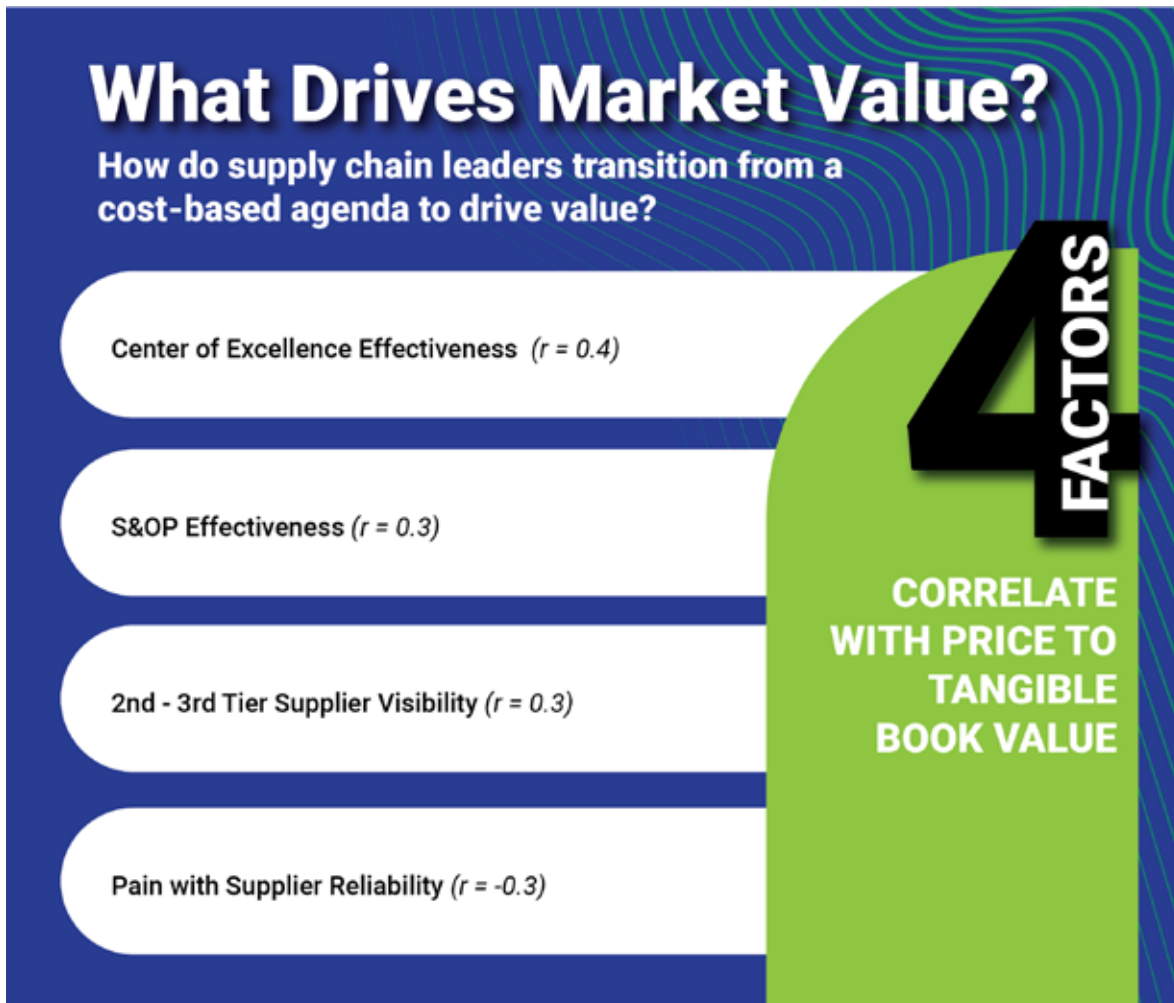
# What Drives Value?

When I wrote the book [Bricks Matter](#), one of the reviewers asked, "How do you define value?" I struggled to answer the question. The Supply Chains to Admire methodology is designed to help business leaders understand value.

The focus of the traditional supply chain organization is cost management. Saving money does not drive value. Improving cost also does not necessarily improve margin. 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 Price to Book Value?"

The definition is:  $\text{Price to Book Value} = \text{Market Share Price} / \text{Book Value/Share Outstanding}$

**Figure 4.** Driving Market Value



Our research finds that companies with a Supply Chain Center of Excellence, an effective S&OP process, and operational supplier development programs to drive supplier reliability are more likely to improve value. These processes become even more critical to managing the supply chain through the pandemic. ❁

# Recommendations

When benchmarking a supply chain, companies need to look at performance and improvement (together) within a peer group over time. There are trade-offs. Companies operating with higher performance levels will struggle with improvement, while companies with a lower level of performance will drive faster progress rates. Improvement processes do not always drive value. Why? The average global multinational has more than a thousand improvement initiatives<sup>1</sup>. Many are overlapping and conflicting. As a result, there is a need to define a multi-year plan reinforced by cross-functional 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 with the best performance on the Effective Frontier align teams to focus on supply chain finance and translate 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.** There is a pushback when we present this data to many supply chain





teams. 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.** We heard a consistent theme when we interviewed the leaders in past reports. Increasing product and customer complexity degrades 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. In this decade, only Maersk successfully built a value network. The efforts are far and few between. The next frontier of supply chain effectiveness lies in the bi-directional orchestration of process flows with trading partners.

7. **Learn from Other Industries. Use a Steady Hand and Focused Leadership to Drive Improvement.** Over the years, when we have interviewed the Supply Chain 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 project for change transformation. Nor is it a story of technology implementation. Instead, it is a story of supply chain leadership, driven by a focused internal team over many years. ✨

<sup>1</sup> <https://www.slideshare.net/loracecere/driving-supply-chain-excellence18june2015final>



# Conclusion

Supply chain excellence does not just "happen." Progress requires moving past the buzzwords of "end-to-end supply chain excellence" and driving cross-functional programs focused on balance sheet improvements.

Success requires focus by teams over many years based on a multi-year roadmap with a clear definition of supply chain strategy. Higher levels of performance require leadership, patience, and organizational alignment.

This report aims to provide feedback to leadership teams to help them better align supply chain programs with corporate finance efforts to drive improved shareholder value. 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 Company's achievements. 🌟



The image is a blue-tinted photograph of an industrial or port setting. In the foreground, a worker wearing a white hard hat, safety glasses, and a high-visibility vest stands with their back to the camera, looking at a clipboard. To the left, a line of white trucks is parked. To the right, a train is visible. In the background, a large crane is lifting a dark container, and a large airplane is suspended in the air. The sky is cloudy, and the overall scene is overlaid with a pattern of green concentric circles in the upper right corner.

# Appendix

# Analysis by Industry

Here we share the individual analyses by industry peer groups to help the reader understand the data behind this report.

In this analysis, we share the details of each company by peer group in alpha order. Each chart enables a quick assessment of revenue, improvement, performance and value. At the beginning of each section, we share the high-level benchmark averages.

In Figures 7A-7C, we share the improvement index cut-off information. As outlined in the methodology, the Supply Chain Index is a measure of improvement. Companies are stack ranked based on performance on orbit charts. The performance criteria is driving improvement better than 2/3 of the industry sector. The Supply Chain Index cut-off in Tables 7A-7C allows quick reference to determine who met these criteria.

**Table 7A.** Retail Industry Improvement Cut-off Information

Retail	Total	Supply Chain Index Cut-off	Winners
Broadline Retail	16	13	0
Drug Retail	7	5	0
eCommere Pure Play Retailers	4	3	0
Food Retail	11	7	1
Home Improvement Retail	6	5	0
Restaurants	19	13	0
Retail Apparel	21	14	1

**Table 7B.** Discrete Industry Improvement Cut-off Information

Discrete	Total	Supply Chain Index Cut-off	Winners
Aerospace and Defense	25	17	2
Apparel	26	17	1
Automotive	20	13	1
Automotive Aftermarket	35	23	
B2B Technology	28	19	1
Contract Manufacturing	10	7	
Consumer Durables	18	12	2
Diversified Industries	28	19	2
Furniture	15	10	1
Medical Device	27	18	2
Semiconductor	30	20	2
Tires	4	3	
Telecommunications	18	12	
Trucks and Heavy Equipment	17	11	1

**Table 7C.** Process Industry Improvement Cut-off Information

Process	Total	Supply Chain Index Cut-off	Winners
Beverages	20	13	1
Chemical	37	25	1
Consumer Nondurables	11	7	1
Containers and Packaging	19	13	1
Food	31	23	0
Personal Products	14	12	0
Pharmaceuticals	32	23	1

## Retail Overview

In this analysis, we evaluate 83 companies in seven retail sectors. In the report, two companies—Koninklijke Ahold Delhaize NV (Ahold) and Ross Stores—qualify for the Winner’s Circle. There are no winners in the other retail sectors.

**Table 8.** Retail Overview

	Number of Companies	Average Revenue (M\$)	Year-over-Year Growth	Inventory Turns	Operating Margin	Return on Invested Capital	Price to Book Value
<b>RETAIL</b>	Average for 2012-2021						
Apparel	20	\$7,362	3.1%	4.60	8.9%	14.4%	4.74
Broadline	16	\$65,402	4.2%	5.20	6.4%	13.5%	3.61
Drug	7	\$66,434	7.3%	7.02	6.8%	14.0%	4.01
eCommerce Pure Play	4	\$147,217	26.0%	38.95	13.7%	14.3%	8.03
Home Improvement	6	\$37,664	8.2%	3.19	7.1%	9.6%	5.42
Grocery	11	\$44,274	2.1%	12.77	3.5%	10.3%	2.71
Restaurants	19	\$5,741	6.1%	81.44	14.1%	18.5%	6.19

## Apparel Retail

The overall industry performance declined over the last decade. The operating margin in 2012 was 12% and fell to 1% in 2021. Inventory values remained relatively flat. TJX, a 2021 Supply Chains to Admire Winner for the fifth consecutive year, dropped out of the winner's circle. Ross Stores is an award winner for four out of eight years of analysis. Shown in Table 10 are the industry averages along with the Supply Chain Index measurement of improvement.

**Table 9.** Retail Sector Averages for Apparel Retail for the Period of 2012-2021

INDUSTRY: Retail Apparel								
COMPANY INFORMATION		IMPROVEMENT	PERFORMANCE				VALUE	
NAME	2021 REVENUE	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAP
<b>2012 - 2021</b>								
Abercrombie & Fitch Co	\$3,125	15	-0.6%	3.17	3.9%	2.8%	1.43	1,777
American Eagle Outfitters	\$3,759	2	2.7%	6.51	7.7%	11.8%	2.64	3,212
ASOS PLC	\$5,325	7	33.5%	2.72	4.5%	17.2%	14.01	4,855
Carter's, Inc	\$3,486	11	5.5%	3.51	11.6%	16.0%	5.14	4,319
Chico's FAS	\$1,324	18	-2.5%	5.89	3.0%	-0.7%	2.09	1,503
Designer Brands Inc	\$2,235	5	3.2%	3.91	5.0%	5.1%	2.42	2,041
Dick's Sporting Goods Inc	\$9,584	9	7.1%	3.38	7.0%	17.7%	2.88	5,421
Foot Locker	\$7,548	1	4.2%	4.10	9.6%	17.2%	2.39	6,158
Gap Inc	\$13,800	17	-0.4%	5.06	8.0%	17.7%	3.86	11,287
Guess?	\$1,877	16	-2.1%	4.12	6.4%	7.3%	2.02	1,665
J.Jill Inc	\$427	10	0.8%	1.60	2.2%	-7.1%	0.40	85
L Brands Inc	\$6,434	12	-0.7%	5.83	16.4%	17.6%	0.00	16,082
Lululemon Athletica inc	\$4,402	8	20.4%	3.77	21.9%	28.7%	11.49	19,062
Marks and Spencer Group PLC	\$11,971	5	-1.7%	7.49	6.6%	5.3%	2.05	8,194
Nordstrom	\$10,715	13	1.8%	5.01	6.4%	9.9%	8.73	8,580
Ross Stores Inc	\$12,532	3	5.2%	6.01	12.3%	37.3%	10.10	28,287
Tapestry Fashion Co	\$5,746	13	4.2%	2.70	17.2%	20.2%	4.13	11,003
TJX Companies Inc	\$32,137	19	4.4%	6.13	10.5%	36.2%	11.59	56,952
Urban Outfitters	\$3,450	3	4.5%	6.58	9.3%	14.4%	2.69	3,728
<b>MEAN WITH OUTLIERS</b>	<b>\$7,362</b>		<b>4.7%</b>	<b>4.60</b>	<b>8.9%</b>	<b>14.4%</b>	<b>4.74</b>	<b>10,222</b>
<b>MEAN WITHOUT OUTLIERS</b>			<b>3.1%</b>	<b>4.60</b>	<b>8.9%</b>	<b>14.4%</b>	<b>4.74</b>	<b>7,625</b>

## Broadline Retail

For retail broad-line retailers, profit decreased by 57% in the past decade, while inventory performance improved by 17%. While Dollar General, placed for five out of nine years in the Winner's Circle, they fell out in this analysis based on inventory performance.

A close competitor, Dollar Tree, a Supply Chains to Admire award winner for four of the nine years also, fails to make the performance targets. Of note, Walmart and Target, winners in 2016 and 2015, no longer lead their peer groups. Each fails due to the focus on singular metrics.

**Table 10.** Broadline Retail Sector Averages for 2012-2021

INDUSTRY: Retail Broadline								
COMPANY INFORMATION		IMPROVEMENT	PERFORMANCE				VALUE	
NAME	2021 REVENUE	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAP
<b>2012 - 2021</b>								
Bed Bath & Beyond Inc	9,233	13	0.9%	2.91	0.09	14.0%	2.50	7,245
Best Buy Co	47,262	4	-0.3%	5.98	0.04	15.7%	4.21	16,257
Big Lots	6,199	7	2.4%	3.58	0.05	21.8%	2.52	1,743
Burlinton Stores Inc	5,764	3	5.0%	3.50	0.05	13.3%	18.29	8,638
Costco Wholesale	195,929	5	8.3%	11.64	0.03	15.0%	7.28	101,907
Dillard's Inc	4,433	15	-2.8%	3.02	0.05	8.5%	1.67	2,916
Dollar General Corp	33,747	9	10.1%	4.56	0.09	15.6%	4.95	29,619
Dollar Tree Stores	25,509	12	17.5%	4.80	0.09	15.5%	5.39	19,800
Kohl's	15,955	14	-1.2%	3.37	0.07	8.5%	1.72	9,345
Macy's	18,097	16	-2.7%	3.02	0.06	4.2%	2.47	11,315
Office Depot Inc	8,465	1	-2.7%	6.88	0.03	-1.0%	1.33	2,220
Pricesmart Inc	3,620	9	7.9%	8.53	0.05	11.9%	3.97	2,529
Target	93,561	6	3.5%	6.07	0.07	9.9%	4.14	54,637
Tractor Supply Co	12,731	9	11.8%	3.43	0.10	28.6%	8.04	12,308
WalMart	559,151	7	2.9%	8.43	0.05	10.8%	3.75	287,790
Williams-Sonoma Inc	6,783	2	6.9%	3.48	0.10	24.0%	0.28	6,048
<b>MEAN WITH OUTLIERS</b>	<b>65,402</b>		<b>4.2%</b>	<b>5.20</b>	<b>0.06</b>	<b>13.5%</b>	<b>4.53</b>	<b>35,895</b>
<b>MEAN WITHOUT OUTLIERS</b>			<b>4.2%</b>	<b>5.20</b>	<b>0.06</b>	<b>13.5%</b>	<b>3.61</b>	<b>13,187</b>

## Drug Retail

By 2022, there are no Drug Retail Supply Chains to Admire Winners. Prior award winners included CVS and Sun Drug.

Companies subconsciously traded margin for cash. Over the last decade, the overall industry performance declined. The Operating Margin fell 20%, while Inventory turns improved slightly.

**Table 11.** Drug Retail Sector Averages for the Period of 2012-2021

INDUSTRY: Retail Drug								
COMPANY INFORMATION		IMPROVEMENT	PERFORMANCE				VALUE	
NAME	2021 REVENUE	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAPITALIZATION
<b>2012 - 2021</b>								
CVS Pharmacy	\$292,111	2	10.8%	10.47	5.6%	7.0%	2.01	92,644
PetMed Express	\$309	1	3.0%	6.99	13.5%	25.4%	4.69	474
Raia Drogasil	\$3,932	2	10.0%	3.84	4.7%	10.2%	4.76	4,333
Rite-Aid Pharmacy	\$24,043	2	-0.1%	7.81	1.5%	4.9%	3.69	3,578
Sundrug Company Ltd	\$5,984	6	4.0%	6.55	6.1%	15.2%	1.81	2,527
Ulta Beauty Inc	\$6,152	7	16.2%	3.70	11.9%	26.3%	8.61	12,947
Walgreens Boots Alliance	\$132,509	5	6.8%	9.77	4.0%	8.9%	2.51	61,089
<b>MEAN WITH OUTLIERS</b>	<b>\$66,434</b>		<b>7.3%</b>	<b>7.02</b>	<b>6.8%</b>	<b>14.0%</b>	<b>4.01</b>	<b>25,370</b>
<b>MEAN WITHOUT OUTLIERS</b>			<b>7.3%</b>	<b>7.02</b>	<b>6.8%</b>	<b>14.0%</b>	<b>4.01</b>	<b>25,370</b>



## Grocery Retail

For 2022, Ahold places in the Winner's Circle. In Grocery Retail, companies subconsciously traded margin for cash.

During the last decade, margins have been flat and inventory turn performance declined slightly.

**Table 12.** Grocery Retail Sector Averages for the Period of 2012-2021

INDUSTRY: Retail Food								
COMPANY INFORMATION		IMPROVEMENT	PERFORMANCE				VALUE	
NAME	2021 REVENUE	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAPITALIZATION
<b>2012 - 2021</b>								
Carrefour	\$82,397	10	-2%	9.44	2.8%	2%	1.70	18,038
Dairy Farm International	\$10,269	8	3%	8.03	4.2%	23%	5.48	7,098
Koninklijke Ahold Delhaize N.V.	\$85,351	4	9%	15.17	3.7%	12%	2.10	22,651
Metro AG	\$17,998	5	5%	11.86	6.0%	14%	2.42	8,710
Pick N Pay	\$6,215	2	1%	12.56	1.9%	22%	3.11	600
Sainsbury	\$36,873	8	2%	19.78	2.7%	5%	0.78	8,049
Shoprite Supermarkets	\$10,104	5	2%	6.96	5.4%	18%	3.48	5,533
Tesco PLC	\$82,777	1	-1%	20.37	2.6%	2%	1.76	31,057
The Kroger Company	\$122,286	7	5%	14.01	2.5%	10%	3.96	24,604
Weis Markets Incorporated	\$4,113	2	5%	8.96	3.3%	9%	1.39	1,259
<b>MEAN WITH OUTLIERS</b>			<b>3%</b>	<b>12.71</b>	<b>3.5%</b>	<b>12%</b>	<b>2.62</b>	<b>12,760</b>
<b>MEAN WITHOUT OUTLIERS</b>	<b>\$45,838</b>		<b>3%</b>	<b>12.71</b>	<b>3.5%</b>	<b>12%</b>	<b>2.30</b>	<b>12,760</b>



## Home Improvement Retail

For 2020, there are no Home Improvement Retail Supply Chains to Admire Winners. During the last decade, turbulence reigned in this industry. Margin fell by 80%.

**Table 13.** Home Improvement Retail Sector Averages for the Period of 2012-2021

INDUSTRY: Retail Home Improvement								
COMPANY INFORMATION		IMPROVEMENT	PERFORMANCE				VALUE	
NAME	2021 REVENUE	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAPITALIZATION
2012 - 2021								
American Woodmark Corp	\$1,744	5	14.7%	15.71	6.0%	8.5%	3.21	1,186
Haverty	\$1,013	2	5.5%	3.57	5.6%	12.4%	1.73	482
Lowe's Companies Inc	\$89,597	5	6.4%	3.93	8.2%	13.8%	12.42	82,499
Lumber Liquidators Holdings	\$1,152	3	5.7%	2.45	1.7%	2.6%	3.83	980
The Home Depot Inc	\$132,110	4	7.0%	4.91	12.9%	27.7%	91.72	205,072
Tile Shop Holdings Inc	\$371	1	9.7%	1.06	8.1%	-7.3%	5.91	543
<b>MEAN WITH OUTLIERS</b>	<b>\$37,664</b>		<b>8.2%</b>	<b>5.27</b>	<b>7.1%</b>	<b>9.6%</b>	<b>19.80</b>	<b>48,460</b>
<b>MEAN WITHOUT OUTLIERS</b>			<b>8.2%</b>	<b>3.19</b>	<b>7.1%</b>	<b>9.6%</b>	<b>5.42</b>	<b>48,460</b>



## Restaurants

By 2021, there are no Supply Chains to Admire Winner in the Restaurant Industry.

The industry is recovering from significant revenue loss in the pandemic. Over the decade, through digitalization and consolidation/ maturity of franchises, the industry matured but failed to achieve economies of scale.

**Table 14.** Restaurant Sector Averages for the Period of 2012-2021

INDUSTRY: Restaurants								
COMPANY INFORMATION		IMPROVEMENT	PERFORMANCE				VALUE	
NAME	2021 REVENUE	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAPITALIZATION
<b>2012 - 2021</b>								
BJ's Restaurants Inc	\$1,087	11	7.2%	84.16	2.9%	6.2%	2.92	932
Brinker International Inc	\$3,338	12	2.0%	53.73	8.3%	17.6%	78.44	2,349
Cheesecake Factory Inc	\$2,928	5	6.3%	33.99	5.7%	13.7%	4.29	2,152
Chipotle's Mexican Grill Inc	\$7,547	13	13.4%	190.92	10.8%	19.4%	11.18	20,389
Cracker Barrel Old Country Store Inc	\$2,821	6	1.8%	12.47	7.8%	16.6%	5.81	3,205
Darden Restaurants Inc	\$7,196	8	0.4%	26.69	8.0%	13.2%	4.92	10,752
Denny's Corp	\$398	18	-0.5%	135.33	11.5%	31.4%	140.76	856
Domino's Pizza Enterprises Ltd	\$4,357	2	10.3%	41.33	17.6%	64.1%	0.00	9,081
Jack in the Box Inc	\$1,144	19	-2.8%	218.53	17.3%	15.9%	18.94	2,334
McDonald's Corp	\$23,223	14	-1.2%	182.28	35.0%	19.7%	3.39	126,349
Nathan's Famous Inc	\$76	17	3.9%	89.96	23.5%	17.3%	1.63	259
Papa John's International	\$2,068	4	5.6%	48.42	6.5%	30.5%	11.98	2,340
Post Holdings inc	\$6,227	9	26.5%	6.69	10.3%	0.2%	1.68	4,624
Red Robin Gourmet Burgers Inc	\$1,162	10	3.8%	36.70	1.3%	-4.9%	2.17	626
Restaurant Brands International	\$4,501	1	21.7%	21.38	38.2%	2.7%	6.14	11,188
Starbucks Corp	\$29,061	3	9.9%	10.97	15.1%	30.8%	14.15	85,871
Texas Roadhouse Inc	\$3,464	7	12.8%	98.92	7.6%	14.3%	4.29	3,494
Wendy's Co	\$1,897	16	-1.4%	227.45	14.8%	5.1%	5.83	3,759
Yum Brands Inc	\$6,584	15	-4.4%	27.45	25.6%	37.5%	6.00	27,220
<b>MEAN WITH OUTLIERS</b>	<b>\$5,741</b>		<b>6.1%</b>	<b>81.44</b>	<b>14.1%</b>	<b>18.5%</b>	<b>17.08</b>	<b>16,725</b>
<b>MEAN WITHOUT OUTLIERS</b>			<b>6.1%</b>	<b>81.44</b>	<b>14.1%</b>	<b>18.5%</b>	<b>6.19</b>	<b>6,210</b>

# Discrete Industry Overview

Peer groups within the discrete industry are configure-to-order, make-to-order, or assemble-to-order manufacturing-centric businesses. The focus is on assembly and 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. Table 15 shows the cut-off for each sector for the Supply Chain Index and details of progress in the discrete industries.

**Table 15.** Overview of the Discrete Industry for the Period of 2012-2021

	Number of Companies	Average Revenue (M\$)	Year-over-Year Growth	Inventory Turns	Operating Margin	Return on Invested Capital	Price to Book
<b>DISCRETE</b>	Average for 2012-2021						
Aerospace & Defense	25	\$17,367	1.6%	5.05	8.7%	10.2%	3.40
Apparel	26	\$9,601	6.5%	2.72	10.6%	12.9%	3.79
Automotive	20	\$89,042	1.0%	6.84	5.6%	5.9%	1.28
Automotive Aftermarket	35	\$11,568	4.4%	7.37	9.9%	8.7%	2.44
B2B Technologies	28	\$37,747	2.9%	6.33	5.9%	7.0%	1.97
Consumer Durables	18	\$14,717	1.6%	4.44	9.4%	8.7%	2.36
Contract Manufacturing	10	\$7,090	0.7%	6.21	3.6%	3.9%	1.46
Diversified Industries	28	\$15,186	1.9%	4.60	13.8%	9.6%	3.43
Furniture	15	\$2,032	5.1%	5.68	5.4%	15.1%	4.02
Medical Device	27	\$7,380	8.81%	2.74	17.81%	11.29%	4.35
Semiconductor	30	\$13,989	11.8%	4.48	15.3%	10.2%	4.23
Telecommunications	18	\$18,454	3.1%	10.1	11.7%	7.3%	2.52
Tires	4	\$19,387	-1.3%	7.18	8.3%	6.6%	1.55
Trucks and Heavy Equipment	17	\$18,788	1.7%	3.84	8.1%	6.7%	2.06



## Aerospace and Defense Industry

For 2022, Lockheed Martin places in the winner circle for the fourth consecutive year and is joined by the newcomer Northrop Grumman. With many ups and downs, margin decline of 30% while Inventory turns improvement is 25%. The industry transformed by Performance-Based Logistics continues to move from selling aircraft to providing service to fly.

**Table 16.** Industry Averages for the Aerospace Sector for the Period of 2012-2021

INDUSTRY: Aerospace & Defense								
COMPANY INFORMATION		IMPROVEMENT	PERFORMANCE				VALUE	
NAME	2021 REVENUE	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAPITALIZATION
<b>2012 - 2021</b>								
AAR Corp	\$1,652	21	-0.2%	3.11	4.3%	2.9%	1.29	1,192
AIRBUS Group	\$61,702	8	-0.3%	2.08	3.4%	13.8%	7.58	68,612
Astronics	\$445	23	11.2%	3.67	7.1%	5.6%	3.34	881
BAE Systems	\$26,856	13	-0.4%	8.79	8.2%	12.1%	4.49	22,606
BOEING	\$62,286	24	0.0%	1.38	2.8%	24.1%	79.01	122,857
Bombadier	\$6,085	5	-8.3%	2.36	2.6%	-4.5%	1.53	4,337
BWX Technologies	\$2,124	7	-0.8%	14.49	12.2%	20.7%	11.85	4,015
Ducommun	\$645	10	1.9%	4.22	6.1%	3.6%	1.37	375
Embraer	\$4,197	14	3.6%	1.86	3.6%	0.2%	1.23	4,337
General Dynamics	\$38,469	11	1.8%	4.43	11.8%	13.9%	3.58	45,746
Heico	\$1,866	15	9.7%	2.86	19.9%	11.8%	5.53	7,585
Hexcel Corp	\$1,325	22	0.7%	4.89	14.2%	11.0%	3.48	4,509
Kaman Aircraft	\$709	16	-4.1%	3.01	6.9%	6.6%	2.18	1,338
L3 Technologies	\$17,814	2	15.8%	6.88	14.5%	6.2%	3.53	20,139
Lear Corp	\$19,263	6	3.5%	15.69	5.6%	15.5%	2.35	8,554
Lockheed Martin	\$67,044	4	4.0%	13.76	12.1%	32.4%	99.70	74,806
Magellan Aerospace Corp	\$688	25	0.6%	4.01	9.0%	8.2%	1.23	745
National Presto Industries	\$356	16	-1.5%	2.77	14.9%	11.6%	1.77	607
Northrop Grumman	\$35,667	3	3.3%	31.59	12.3%	15.6%	5.08	40,989
Raytheon	\$64,388	8	3.5%	4.52	11.5%	8.1%	2.77	101,527
Spirit AeroSystems Holdings	\$3,953	11	1.0%	3.77	2.6%	4.9%	4.66	6,132
TAT Technologies	\$78	19	1.3%	1.91	1.7%	-0.2%	0.72	61
TransDigm Group	\$4,798	20	15.7%	2.09	39.5%	6.4%	1.18	18,261
Woodward	\$2,246	18	3.3%	3.50	11.9%	9.0%	3.13	4,743
<b>MEAN WITH OUTLIERS</b>	<b>\$17,694</b>		<b>2.7%</b>	<b>6.15</b>	<b>9.9%</b>	<b>10.0%</b>	<b>10.52</b>	<b>23,540</b>
<b>MEAN WITHOUT OUTLIERS</b>			<b>1.6%</b>	<b>5.05</b>	<b>8.7%</b>	<b>10.2%</b>	<b>3.40</b>	<b>19,469</b>

## Apparel

Nike placed in the winner's circle for the fifth year. With many ups and downs, margin declined by 1,% while inventory turns declined by of 25%. Over the decade, the industry changed the lower cost of labor and is currently struggling to deliver orders reliably in the face of logistics variability.

**Table 17.** Apparel Sector Evaluation for the Period of 2012-2021

INDUSTRY: Apparel								
COMPANY INFORMATION		IMPROVEMENT	PERFORMANCE				VALUE	
NAME	2021 REVENUE	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAPITALIZATION
<b>2012 - 2021</b>								
Adidas	\$25,124	8	3.6%	2.77	8.4%	13.4%	5.10	38,474
Bosideng International	\$1,995	16	8.0%	2.34	12.4%	7.9%	1.72	2,418
Capri Holdings Ltd	\$4,060	4	21.2%	2.62	20.7%	28.5%	5.22	9,298
Colombia Sportswear	\$3,126	22	7.0%	2.64	10.3%	11.8%	2.77	4,477
Crocs	\$2,313	4	10.3%	3.68	8.1%	25.5%	59.45	2,216
Deckers Outdoors	\$2,546	1	6.6%	3.06	11.1%	15.5%	3.44	3,983
Fossil Group	\$1,870	25	-2.2%	2.56	7.5%	4.3%	2.45	2,331
Gildan Activewear	\$2,923	6	7.0%	2.34	13.1%	12.4%	3.43	6,369
Hanes Brands	\$6,801	9	4.5%	2.32	10.5%	8.1%	6.39	6,979
Hennes & Mauritz AB	\$23,407	12	3.7%	2.67	11.4%	26.6%	6.95	46,413
Hugo Boss	\$3,296	16	3.0%	1.71	11.4%	20.2%	4.75	4,835
Interface Inc	\$1,200	1	2.8%	3.62	9.6%	5.8%	3.23	1,096
Moet Louis Vuitton	\$75,978	15	9.7%	1.24	20.4%	13.0%	4.41	170,192
Moncler	\$1,645	21	9.4%	1.61	26.1%	19.6%	6.51	7,430
Nike	\$44,538	13	8.4%	3.74	12.9%	24.2%	11.02	125,301
Puma	\$8,052	3	7.4%	2.74	4.9%	6.7%	3.21	6,837
PVH	\$7,133	24	5.7%	2.89	7.1%	4.3%	1.77	8,211
Ralph Lauren	\$4,401	23	-1.7%	3.10	11.3%	10.0%	2.95	10,362
Skechers	\$6,285	6	15.5%	2.63	7.8%	11.1%	2.34	4,221
Steve Madden	\$1,866	10	8.8%	8.49	11.7%	16.2%	3.49	2,608
Under Armour	\$5,683	18	15.5%	2.83	7.3%	6.1%	2.43	4,819
Unifirst	\$1,826	20	4.9%	4.00	12.1%	9.6%	2.01	2,893
Vera Bradley	\$468	26	3.1%	1.93	10.4%	15.3%	2.25	552
VF Corp	\$9,239	13	0.6%	3.42	11.3%	12.1%	6.41	28,397
Wacoal Holdings Corp	\$1,436	19	-2.5%	1.61	5.6%	3.5%	0.68	1,338
Wolverine World Wide	\$2,415	4	7.8%	3.93	8.2%	4.6%	3.22	2,597
<b>MEAN WITH OUTLIERS</b>			<b>7.3%</b>	<b>3.0</b>	<b>11.7%</b>	<b>13.6%</b>	<b>3.90</b>	<b>18,184.09</b>
<b>MEAN WITHOUT OUTLIERS</b>	<b>\$8,767</b>		<b>6.1%</b>	<b>3.0</b>	<b>11.1%</b>	<b>13.6%</b>	<b>3.90</b>	<b>3,925.99</b>

## Automotive

For 2022, Subaru places in the Winner's Circle for the automotive sector. Audi and BWI won in prior years.

With a religious vigor for lean manufacturing and plant automation, the automotive industry largely squandered the opportunities for digital consumer automation. The sector did poorly in the 2007 recession giving the industry a chance to rebound in the growing economy. Over the decade, margins were consistent at 6% while inventory level performance decreased by 15%.

**Table 18.** Automotive Sector Evaluation for the Period

INDUSTRY: Automotive								
COMPANY INFORMATION		IMPROVEMENT	PERFORMANCE				VALUE	
NAME	2021 REVENUE	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAPITALIZATION
<b>2012 - 2021</b>								
Bayerische Motoren Werke AG	\$131,616	9	3.3%	6.09	9.60%	8.1%	1.17	64,115
BYD - Build Your Dream	\$33,476	17	17.1%	4.58	5.18%	2.6%	3.40	28,204
Daimler AG	\$158,420	17	1.4%	4.86	6.91%	5.8%	1.21	77,154
Ferrari NV	\$5,053	1	6.5%	3.02	19.98%	14.1%	15.35	18,496
Ford Motor Co	\$136,341	7	0.3%	13.31	7.10%	3.7%	1.80	51,894
General Motors Co	\$127,004	7	-1.4%	10.66	3.82%	6.1%	1.37	56,321
Honda Motor Co Ltd	\$124,241	5	2.1%	7.42	4.88%	4.1%	0.86	55,859
Isuzu Motors Ltd	\$18,000	9	1.2%	6.77	7.83%	9.8%	1.38	9,824
Mazda Motor Corp	\$27,187	9	0.2%	6.56	3.27%	3.8%	1.12	8,665
Mitsubishi Motors Corp	\$13,730	20	-3.3%	8.18	2.87%	1.3%	1.02	5,763
Nissan Motor Co Ltd	\$74,169	17	-2.7%	7.37	3.88%	2.6%	0.79	32,856
Renault SA	\$54,678	6	-0.2%	8.25	3.96%	1.9%	0.48	15,958
Stellantis	\$176,790	2	20.8%	7.76	5.36%	6.3%	0.65	19,350
Subaru	\$26,698	12	4.2%	6.91	9.47%	14.7%	1.96	21,293
Suzuki Motor Corp	\$29,981	14	0.2%	7.57	6.79%	6.5%	0.58	8,367
Tata Motors Ltd	\$33,367	16	2.8%	5.49	-0.75%	3.2%	2.21	18,251
Tesla Inc	\$53,823	3	91.2%	4.21	-12.79%	-13.4%	23.22	207,092
Toyota Motor Corp	\$256,722	3	1.7%	10.13	7.66%	5.0%	1.18	192,621
Volkswagen AG	\$296,030	12	3.3%	4.84	5.07%	4.8%	0.82	100,827
Yamaha Motors	\$3,515	14	-2.0%	2.85	8.16%	7.1%	1.13	3,831
<b>MEAN WITH OUTLIERS</b>	<b>\$89,042</b>		<b>7.3%</b>	<b>6.84</b>	<b>5.41%</b>	<b>4.9%</b>	<b>3.09</b>	<b>49,837</b>
<b>MEAN WITHOUT OUTLIERS</b>			<b>1.0%</b>	<b>6.84</b>	<b>5.61%</b>	<b>5.9%</b>	<b>1.28</b>	<b>33,168</b>

## Automotive Parts

For 2021, there is no winner in the Automotive Parts Sector. Prior winners included BorgWarner and Continental.

Tethered to large brand owners with a diligent focus on cost-cutting and inadequate supplier development programs, only the tough survive in the Automotive Parts industry. Margins were flat and inventory performance declined by 32%.





Table 19. Automotive Parts Sector Evaluation for the Period

INDUSTRY: Auto Parts								
COMPANY INFORMATION		IMPROVEMENT	PERFORMANCE				VALUE	
NAME	2021 REVENUE	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAPITALIZATION
<b>2012 - 2021</b>								
Advance Auto Parts	\$10,997.99	19	6.8%	1.28	8.05%	14.1%	4.08	10,399
Aisin Seiki Co Ltd	\$33,259.68	19	2.7%	11.09	5.24%	4.7%	0.64	7,148
Allison Transmission Holdings Inc	\$2,402.00	30	2.0%	6.50	26.77%	11.0%	5.82	5,071
American Axle & Manufacturing	\$5,156.60	2	9.1%	13.14	7.53%	6.3%	6.92	1,337
Autoliv Inc	\$8,230.00	7	0.3%	9.52	8.37%	8.8%	2.45	7,130
BorgWarner Inc	\$14,838.00	1	8.4%	10.33	11.65%	10.4%	2.41	9,834
Commercial Vehicle Group	\$971.58	13	2.9%	8.08	3.98%	3.6%	2.60	211
Continental AG	\$39,950.31	34	0.0%	7.66	9.29%	9.4%	2.45	35,438
Cooper-Standard Holdings Inc	\$2,330.19	29	-1.5%	16.93	3.62%	1.5%	1.58	1,040
Dana Inc	\$8,945.00	32	2.6%	7.22	6.20%	8.7%	2.50	2,892
Danaher Corp	\$29,453.00	9	7.7%	4.36	17.82%	8.6%	2.84	85,475
Denso Corp	\$46,569.27	32	2.7%	7.77	6.18%	5.8%	1.33	39,939
Dorman Products Inc	\$1,345.25	28	10.3%	2.44	16.68%	17.6%	3.77	2,310
Douglas Dynamics	\$541.45	15	12.8%	4.16	15.26%	5.6%	3.28	720
Gentex Corp	\$1,731.17	18	5.6%	5.05	26.75%	18.3%	3.31	5,812
Gentherm Inc	\$1,046.15	7	12.0%	6.33	10.25%	11.7%	3.42	1,458
Hella KGaA Hueck & Co	\$7,564.82	17	3.2%	6.12	5.87%	9.4%	1.10	2,993
Johnson Controls	\$23,668.00	5	-2.5%	9.02	7.31%	6.4%	1.93	30,932
JTEKT Corp	\$11,756.50	35	0.9%	6.62	3.99%	3.7%	0.59	2,581
Koito Manufacturing Co Ltd	\$6,663.41	23	3.2%	10.26	9.66%	11.1%	1.18	4,918
LKQ Corp	\$13,088.50	16	15.4%	2.75	9.58%	8.4%	2.79	10,214
Mabuchi Motor Co Ltd	\$1,226.71	22	2.4%	2.83	12.74%	6.3%	0.85	1,804
Magan International	\$36,242.00	10	2.8%	10.11	6.25%	14.2%	1.79	18,235
Meritor Inc	\$3,833.00	24	-0.5%	7.71	6.21%	33.2%	2.46	1,415
Motorcar Parts of America	\$540.78	27	13.1%	2.62	10.91%	1.3%	1.89	397
Nexteer Automotive Group Ltd	\$3,358.73	6	5.1%	9.53	7.64%	11.7%	0.65	1,180
NGK Spark Plug Co Ltd	\$4,033.14	19	2.8%	2.97	13.29%	8.2%	0.39	1,512
O'Reilly Automotive	\$13,327.56	11	8.7%	1.44	18.87%	31.5%	47.10	25,471
PT Astra International Tbk	\$16,255.34	3	0.1%	8.89	10.01%	9.2%	2.19	18,988
Stanley Electric Co Ltd	\$3,393.23	24	1.8%	10.17	10.38%	7.4%	0.85	2,671
Tenneco Inc	\$18,035.00	12	10.7%	8.70	4.56%	6.2%	5.28	2,320
The Timken Co	\$4,132.90	26	-0.9%	3.25	11.62%	9.8%	2.10	3,810
Toyota Gosei Co Ltd	\$6,806.06	3	1.5%	10.64	4.91%	5.0%	0.35	1,176
Valeo SA	\$20,424.05	31	3.4%	9.72	5.57%	7.1%	2.44	9,759
Visteon Corp	\$2,773.00	13	-3.3%	12.66	4.65%	17.2%	4.82	3,337
<b>MEAN WITH OUTLIERS</b>			<b>6%</b>	<b>7.66</b>	<b>10%</b>	<b>11%</b>	<b>3.73</b>	<b>9,035</b>
<b>MEAN WITHOUT OUTLIERS</b>	<b>\$10,726</b>		<b>5%</b>	<b>7.45</b>	<b>10%</b>	<b>9%</b>	<b>2.43</b>	<b>5,519</b>

## B2B Technology

For 2022, Apple places in the Winner's Circle for the eighth year.

Sourcing and contract manufacturing relationships tethered to new product launch programs drove supply chain success in this industry. As prices for goods sold, margins declined over the decade until the start of the pandemic, but then improved to 7% in 2021. Despite channel shortages, inventory turns declined from 10.35 in 2012 to 6.40 in 2021. The primary issue was an increase in lead times and logistics variability.

**Table 20.** B2B Technology Sector Evaluation for the Period of 2012-2021

INDUSTRY: B2B Technology								
COMPANY INFORMATION		IMPROVEMENT	PERFORMANCE				VALUE	
NAME	2021 REVENUE	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAPITALIZATION
<b>2012 - 2021</b>								
Alps Electric Co Ltd	\$6,773	26	0.7%	6.97	4.7%	4.4%	1.61	3,537
Ambarella	\$223	28	10.9%	4.69	5.7%	11.6%	5.91	2,221
Apple Inc	\$365,817	7	14.0%	52.99	28.3%	30.9%	12.35	1,086,466
Bang & Olufsen A/S	\$419	11	-0.1%	3.06	-7.1%	-6.3%	3.03	752
Eastman Kodak Co	\$1,150	12	-10.1%	4.38	-3.0%	-12.6%	2.69	498
EnerSys Manufactures	\$2,978	23	4.5%	4.78	10.3%	9.0%	2.41	3,002
Funai Electric Co Ltd	\$759	25	-13.6%	4.53	-2.6%	-8.9%	0.15	76
GoPro Inc	\$1,161	2	24.8%	4.56	-0.9%	1.5%	3.59	1,713
Hewlett Packard	\$63,487	13	-4.8%	9.20	7.4%	47.3%	0.35	28,520
Hewlett Packard Enterprise Co	\$27,784	1	-6.4%	7.92	7.3%	3.5%	0.62	13,566
JVC Kenwood Corp	\$2,581	14	-4.2%	5.56	2.1%	1.1%	0.24	136
Lenovo Group	\$60,742	4	11.5%	12.96	2.0%	11.2%	2.88	10,103
LG Display Co Ltd	\$26,103	6	2.4%	9.62	3.4%	2.3%	0.76	8,050
LG Electronics	\$65,280	3	3.6%	7.71	3.6%	2.7%	0.00	0
Logitech International	\$5,252	19	10.2%	5.77	8.6%	16.6%	4.61	6,081
LSI Industries	\$316	20	0.9%	5.21	2.0%	0.5%	1.36	191
NCR	\$7,156	10	3.3%	6.53	8.1%	5.1%	4.65	4,468
Nintendo Co Ltd	\$16,592	27	9.0%	5.78	9.8%	8.0%	2.50	33,842
Samsung	\$244,276	4	5.8%	3.52	16.3%	13.9%	0.00	0
Seagate	\$10,681	15	0.5%	8.94	13.3%	22.9%	11.74	15,254
Seiko Epson Corp	\$9,395	8	-2.4%	3.32	6.2%	7.9%	0.23	1,173
Sharp Corp	\$22,884	24	-3.7%	7.87	0.4%	-9.1%	2.55	7,104
Sony Corp	\$84,893	9	0.4%	8.35	5.3%	4.2%	1.64	60,229
Super Micro Computer Inc	\$3,557	17	14.8%	3.52	3.9%	8.9%	1.63	1,206
Truly International Holdings Ltd	\$2,094	16	9.0%	8.24	6.2%	5.7%	0.72	693
Universal Electronics Inc	\$602	22	2.9%	3.70	4.4%	5.6%	2.31	660
Western Digital Corp	\$16,922	21	7.6%	5.89	10.2%	6.4%	1.80	17,983
Xerox	\$7,038	17	-10.0%	8.36	9.2%	3.1%	0.89	6,614
<b>MEAN WITH OUTLIERS</b>	<b>\$37,747</b>		<b>2.9%</b>	<b>8.00</b>	<b>5.9%</b>	<b>7.0%</b>	<b>2.62</b>	<b>46,934</b>
<b>MEAN WITHOUT OUTLIERS</b>			<b>2.9%</b>	<b>6.33</b>	<b>5.9%</b>	<b>7.0%</b>	<b>1.97</b>	<b>6,698</b>

## Consumer Durables

Asso Abloy is the Winner in the 2022 Supply Chains to Admire analysis for the durable consumer industry for the third consecutive year. Toro returns to the Winners Circle.

With an average margin of 10% and an ever-changing product portfolio, effective supply chain management is essential for this industry. Over the last decade, this sector is one of the few where margin increased (13%), but Inventory turns declined by 20%.

**Table 21.** Consumer Durable Technology Sector Evaluation for the Period of 2012-2021

INDUSTRY: Household - Durable								
COMPANY INFORMATION		IMPROVEMENT	PERFORMANCE				VALUE	
NAME	2021 REVENUE	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAPITALIZATION
<b>2012-2021</b>								
Armstrong World Industries	\$1,107	4	-5.9%	7.57	15.0%	8.2%	7.53	3,186
Asso Abloy AB	\$11,100	12	5.7%	4.88	15.1%	11.0%	4.03	22,644
Breville Group	\$887	9	9.3%	3.74	12.3%	20.5%	2.61	781
Canon	\$32,021	17	-2.9%	3.50	7.8%	6.4%	0.81	21,590
Compagnie de Saint-Gobain SA	\$52,249	8	-0.7%	5.09	7.2%	3.8%	0.95	20,474
Electrolux AB	\$14,678	5	-0.4%	6.54	4.3%	11.1%	3.41	7,352
Hamilton Beach Brands Holding Co	\$658	1	-1.3%	1.39	3.7%	6.5%	2.88	138
Husqvarna AB	\$5,498	12	1.9%	2.89	7.8%	8.6%	2.68	5,049
iRobot Corp	\$1,565	18	13.3%	4.96	7.6%	11.6%	3.09	1,511
Koninklijke Philips	\$20,299	6	-2.8%	3.45	6.5%	7.1%	2.32	32,914
Panasonic Corp	\$63,191	2	-4.4%	6.80	3.8%	0.6%	1.45	24,669
Ryobi Ltd	\$1,805	16	-1.2%	3.98	3.4%	2.3%	0.16	174
SKF AB	\$9,549	15	-0.2%	3.55	10.3%	9.9%	2.85	9,745
Snap-on Inc	\$4,602	3	4.6%	3.24	21.5%	14.2%	3.09	8,689
Stanley Black and Decker Inc	\$15,617	14	5.5%	4.08	10.9%	8.1%	2.67	20,163
The Timken Co	\$4,133	9	-0.9%	3.25	11.6%	9.8%	2.10	3,810
Toro Co	\$3,960	7	7.9%	4.49	12.5%	24.9%	9.47	6,175
Whirlpool Corp	\$21,985	11	1.8%	6.50	7.4%	8.5%	2.68	11,358
<b>MEAN WITH OUTLIERS</b>	<b>\$14,717</b>		<b>1.6%</b>	<b>4.44</b>	<b>9.4%</b>	<b>9.6%</b>	<b>3.04</b>	<b>11,135</b>
<b>MEAN WITHOUT OUTLIERS</b>			<b>1.6%</b>	<b>4.44</b>	<b>9.4%</b>	<b>8.7%</b>	<b>2.36</b>	<b>11,135</b>



## Contract Manufacturers

There are no Supply Chains to Admire Award Winner from the contract manufacturing sector in 2022. Celestica won in a prior year. Jabil is the top performer barely missing the Winners Circle for 2022.

Supply chain management in contract manufacturing is a challenging world. Over the last decade, with a 3% margin and a 1% growth rate, the 200% increase in growth during the pandemic was challenging.

**Table 22.** Contract Manufacturing Sector Evaluation for the Period of 2012-2021

INDUSTRY: Contract Manufacturers								
COMPANY INFORMATION		IMPROVEMENT	PERFORMANCE				VALUE	
NAME	2021 REVENUE	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAPITALIZATION
<b>2012-2021</b>								
Benchmark Electronics Inc	\$2,255	4	0.4%	6.27	3.2%	3.8%	0.98	1,156
Celestica Inc	\$5,635	5	-2.2%	6.29	2.7%	6.3%	1.12	1,487
Creative technologies Ltd	\$84	10	-8.0%	3.26	-27.0%	-8.5%	1.04	114
Flex Ltd	\$24,124	6	-1.3%	6.84	2.2%	7.4%	2.38	6,646
Ibiden Co Ltd	\$3,051	1	-1.1%	5.92	6.0%	1.0%	0.67	1,913
Jabil Circuit Inc	\$29,285	6	6.2%	6.87	2.9%	6.7%	2.42	5,179
Kimball International	\$569	8	-4.4%	8.65	4.1%	11.9%	2.45	497
Plexus Corp	\$3,369	2	4.4%	4.00	4.6%	8.0%	1.95	1,754
Sigmatron International	\$278	9	6.5%	3.20	1.3%	0.9%	0.46	28
TTM Technologies Inc	\$2,249	7	6.2%	10.79	5.5%	1.5%	1.13	1,132
<b>MEAN WITH OUTLIERS</b>	<b>\$7,090</b>		<b>6.6%</b>	<b>6.21</b>	<b>0.5%</b>	<b>3.9%</b>	<b>1.46</b>	<b>1,991</b>
<b>MEAN WITHOUT OUTLIERS</b>			<b>6.6%</b>	<b>6.21</b>	<b>3.6%</b>	<b>3.9%</b>	<b>1.46</b>	<b>1,473</b>



## Diversified Industries

Diversified industries are discrete conglomerates. In 2022, Ametek and Hubbell make the Winner's Circle in the diversified industrial sector. Prior winners include Honeywell and Rockwell Automation. Schneider Electric is driving substantial improvement and is poised to be a future Supply Chain Leader.

Chasing the lower cost of labor, dependent on outsourced manufacturing, and building global sourcing relationships, Industry Margins fell 20%, and Inventory Turns declined 15% from 2012-2021.

**Table 23.** Diversified Sector Evaluation for the Period of 2012-2021

INDUSTRY: Diversified Industries								
COMPANY INFORMATION		IMPROVEMENT	PERFORMANCE				VALUE	
NAME	2021 REVENUE	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAPITALIZATION
<b>2012 - 2021</b>								
3M Co	\$35,355	12	1.9%	4.12	22.0%	20.2%	8.13	101,477
ABB LTD	\$28,945	9	-1.9%	4.59	9.0%	11.8%	3.42	52,118
AMETEK Inc	\$5,547	15	6.8%	5.17	22.3%	11.5%	4.10	17,553
Avery Dennison Corp	\$8,408	2	3.9%	8.27	9.9%	12.6%	6.58	8,450
Dover Corp	\$7,907	15	1.2%	5.32	14.1%	11.2%	3.78	14,292
Eaton	\$19,628	5	2.8%	5.56	11.5%	8.2%	2.31	36,744
Emerson Electric	\$18,236	4	-2.1%	6.03	17.6%	13.8%	4.75	42,828
Enerpack Tool Co	\$529	11	-5.7%	4.54	11.0%	-1.7%	2.77	1,627
Fanuc Corp	\$5,200	24	2.9%	2.85	31.4%	11.0%	2.97	36,380
Flowserve Corp	\$3,541	25	-2.2%	3.41	9.6%	8.0%	3.55	6,335
Fortive Corp	\$5,255	7	0.2%	3.53	17.2%	11.9%	2.34	12,824
Generac Holdings	\$3,737	19	18.2%	2.72	18.2%	11.7%	7.15	6,319
General Electric Co	\$74,196	27	-5.8%	4.15	11.8%	-1.3%	2.51	183,950
Hillenbrand Inc	\$2,865	12	13.9%	6.15	11.7%	8.1%	3.14	2,419
Honeywell	\$34,392	6	-0.4%	6.01	15.8%	14.7%	5.47	98,995
Hubbell Inc	\$4,194	18	4.3%	4.80	14.1%	11.3%	3.48	6,578
Ingersoll-Rand PLC	\$5,152	1	11.1%	1.50	8.6%	1.6%	1.66	6,253
Legrand SA	\$8,275	26	3.8%	3.44	18.8%	10.0%	2.45	12,961
MDU Resources Group Inc	\$5,681	3	3.6%	13.54	9.1%	3.5%	1.87	5,098
Morgan Advanced Materials	\$1,308	22	-2.7%	1.83	11.4%	9.4%	2.13	581
MSC Industrial Direct Co Inc	\$3,243	28	5.0%	3.33	13.3%	15.1%	3.72	4,697
Parker Hannifin	\$14,348	8	1.8%	6.59	12.6%	11.6%	3.73	23,036
Rockwell Automation Inc	\$6,997	14	1.7%	6.31	17.9%	22.9%	12.40	21,040
Schneider Electric	\$34,200	21	1.3%	5.14	14.3%	7.2%	2.19	53,090
Siemens AG	\$74,413	10	-2.1%	3.80	8.5%	8.1%	2.32	104,342
Toshiba	\$28,813	20	-8.8%	5.61	1.8%	3.5%	1.54	14,479
Trinity Industries Inc	\$1,516	22	-2.0%	4.16	13.6%	5.3%	1.48	3,584
Valmont Industries Inc	\$3,502	15	3.3%	5.29	9.8%	8.4%	2.93	3,477
<b>MEAN WITH OUTLIERS</b>	<b>\$15,186</b>		<b>1.9%</b>	<b>4.92</b>	<b>13.8%</b>	<b>9.6%</b>	<b>3.75</b>	<b>31,483</b>
<b>MEAN WITHOUT OUTLIERS</b>			<b>1.9%</b>	<b>4.60</b>	<b>13.8%</b>	<b>9.6%</b>	<b>3.43</b>	<b>25,836</b>

## Furniture

For 2022, Sleep Number places for a fourth consecutive year.

Chasing the lower cost of labor, furniture manufacturers outsourced manufacturing and secured global sourcing relationships. As labor prices shifted, margins declined 80%, but returned to 2010 levels in the pandemic. Inventory Turns declined 75% from 2012-2021. Laggards in managing the global supply chain, regional players outpaced those with a more global presence.

**Table 24.** Furniture Sector Evaluation for the Period of 2012-2021

INDUSTRY: Furniture								
COMPANY INFORMATION		IMPROVEMENT	PERFORMANCE				VALUE	
NAME	2021 REVENUE	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAPITALIZATION
<b>2012 - 2021</b>								
Bassett Furniture Industry	\$486.53	1	7.5%	3.07	3.8%	6.4%	1.30	225
Ethan Allen Interiors Inc	\$685.17	3	0.5%	2.20	7.9%	9.1%	1.97	725
Flexsteel Industries	\$478.93	4	4.3%	3.60	4.2%	5.5%	1.34	255
HNI Corp	\$2,184.41	10	2.0%	10.75	5.9%	10.9%	3.52	1,755
Hooker Furniture	\$540.08	9	15.3%	4.88	6.4%	7.7%	1.52	301
Howden Joinery Group	\$2,880.39	2	8.5%	2.66	16.3%	46.8%	3.68	2,842
Hunter Douglas	\$3,543.00	12	3.4%	2.51	6.9%	8.6%	0.87	1,578
MillerKnoll Inc	\$2,465.10	5	3.9%	5.42	7.2%	13.1%	2.37	1,417
La-Z-Boy	\$1,734.24	7	3.8%	5.43	10.5%	11.4%	4.41	5,532
Leggett & Platt	\$5,072.60	11	4.2%	11.42	7.5%	11.9%	3.48	2,011
NACCO Industry	\$191.85	8	-2.7%	2.99	-18.1%	8.9%	0.70	180
Natuzzi	\$505.69	15	-2.1%	3.03	-3.8%	-9.7%	0.69	101
Sleep Number	\$2,184.95	6	11.6%	7.68	8.1%	67.4%	4.33	1,402
Steelcase	\$2,596.20	14	1.4%	11.84	5.2%	9.0%	2.38	1,843
Tempur Sealy	\$4,930.80	13	15.4%	7.70	12.0%	10.8%	27.68	4,153
<b>MEAN WITH OUTLIERS</b>			<b>4%</b>	<b>5.86</b>	<b>0.06</b>	<b>16%</b>	<b>4.01</b>	<b>1,414</b>
<b>MEAN WITHOUT OUTLIERS</b>	<b>1,807</b>		<b>4%</b>	<b>5.86</b>	<b>0.07</b>	<b>10%</b>	<b>2.41</b>	<b>1,414</b>

## Medical Device

For 2022, Intuitive Surgical places in the Winner's Circle for the third time and ResMed for the second time in nine years. Medtronic was an early leader that failed to place in the last five years.

With high margins, the Medical Device industry is slow to build supply chain processes, and no company stepped up to be an industry leader in the building of value chains. Over the decade, operating margins were flat at 19% while Inventory Turns declined 14%.

Table 25. Medical Device Sector Evaluation for the Period of 2012-2021

INDUSTRY: Medical Devices								
COMPANY INFORMATION		IMPROVEMENT	PERFORMANCE				VALUE	
NAME	2021 REVENUE	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAPITALIZATION
<b>2012 - 2021</b>								
Abiomed Inc	\$848	6	24.3%	2.05	18.1%	18.2%	10.31	7,351
Ansell Ltd	\$2,027	23	5.2%	2.77	11.1%	10.3%	1.45	1,888
Becton Dickinson and Co	\$20,248	2	10.9%	3.29	15.4%	6.8%	3.83	46,209
Bio-Rad Laboratories Inc	\$2,923	25	3.6%	1.90	9.9%	14.7%	1.79	8,462
Boston Scientific	\$11,888	27	4.8%	2.46	13.9%	0.8%	3.64	35,307
Bruker Corp	\$2,418	7	4.2%	1.86	12.1%	10.1%	6.38	5,530
Charles River Laboratories International Inc	\$3,540	15	12.3%	9.85	14.6%	8.4%	4.79	6,427
Coloplast	\$3,121	5	5.2%	3.05	31.9%	44.5%	19.52	16,443
ConvaTec Group PLC	\$2,038	1	1.9%	2.16	11.5%	0.7%	1.57	2,462
Dentsply	\$4,251	20	6.4%	3.35	12.8%	1.6%	2.46	10,142
Edwards Lifesciences	\$5,233	10	12.2%	1.73	26.5%	20.8%	8.79	31,053
Hologic Inc	\$5,632	9	12.9%	4.12	18.0%	4.8%	4.41	11,661
Intuitive Surgical Inc	\$5,710	3	13.1%	3.64	32.2%	16.0%	7.00	48,785
Medtronic	\$30,117	20	7.5%	2.40	22.4%	7.0%	2.66	105,610
Mettler-Toledo International Inc	\$3,718	8	5.0%	4.78	22.0%	30.8%	48.55	15,634
MicroPort Scientific Corp	\$779	16	24.2%	1.19	1.5%	-0.2%	2.59	2,191
PerkinElmer Inc	\$5,067	11	10.9%	4.06	14.9%	7.0%	3.04	9,390
ResMed Inc	\$3,197	4	9.9%	3.28	24.6%	14.9%	6.93	15,651
Smith and Nephew	\$5,212	25	2.2%	0.96	18.5%	10.7%	3.46	15,528
Stryker	\$17,108	18	7.7%	1.87	19.5%	9.6%	4.91	55,279
Teleflex Inc	\$2,810	24	6.7%	2.57	17.5%	5.3%	3.72	9,962
Terumo Corp	\$5,791	18	4.7%	2.30	16.0%	7.4%	5.37	29,662
The Cooper Companies Inc	\$2,923	17	8.4%	1.72	17.6%	10.8%	3.23	11,073
Thermo Fisher Scientific Inc	\$39,211	12	13.4%	4.47	16.3%	7.1%	3.41	96,932
Waters Corp	\$2,786	20	4.3%	3.30	28.5%	19.5%	29.77	12,897
West Pharmaceutical Services Inc	\$2,832	13	9.4%	5.07	15.4%	12.9%	6.41	10,118
Zimmer Biomet Holdings	\$7,836	13	6.5%	1.02	18.2%	4.5%	2.31	22,294
<b>MEAN WITH OUTLIERS</b>	<b>\$7,380</b>		<b>8.8%</b>	<b>3.01</b>	<b>17.8%</b>	<b>11.3%</b>	<b>7.49</b>	<b>23,850</b>
<b>MEAN WITHOUT OUTLIERS</b>			<b>8.8%</b>	<b>2.74</b>	<b>17.8%</b>	<b>11.3%</b>	<b>4.35</b>	<b>17,140</b>

## Telecommunications

For 2021, there are no winners in the telecommunications sector for the Supply Chains to Admire analysis.

With intense market pressure, short-lifecycles, and sourcing cost increases, the industry used supply chain practices to improve resilience; margins were flat at 12% while Inventory turns declined 45%.

**Table 26.** Telecommunications Sector Evaluation for the Period of 2011-2021

INDUSTRY: Telecommunications								
COMPANY INFORMATION		IMPROVEMENT	PERFORMANCE				VALUE	
NAME	2021 REVENUE	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAPITALIZATION
<b>2012 - 2021</b>								
Adtran	\$563	18	-2.0%	3.15	1.7%	1.8%	1.98	961
Avnet	\$19,535	17	-2.0%	6.79	3.0%	5.2%	1.08	4,832
Belden	\$2,408	15	3.1%	5.78	9.1%	2.2%	2.65	2,577
Cisco Systems Inc	\$49,818	5	1.5%	12.32	25.2%	12.8%	3.57	169,999
EchoStar Group	\$1,986	1	-1.3%	15.83	7.9%	1.6%	0.91	3,289
Ericsson	\$27,143	4	-2.3%	5.23	5.5%	3.2%	2.31	31,817
Fabrinet	\$1,879	16	11.1%	4.95	7.2%	11.0%	2.21	1,675
Juniper Networks	\$4,735	2	0.7%	19.14	13.1%	4.8%	1.95	9,895
Motorola Solutions	\$8,171	5	0.5%	8.82	18.5%	17.0%	4.93	20,855
Nokia Oyj	\$26,269	10	4.5%	6.01	5.7%	0.9%	1.90	26,681
Rogers Communications Inc	\$11,689	3	-0.4%	22.88	22.8%	7.4%	3.70	12,121
Skyworth Digital Holdings Ltd	\$7,888	10	10.6%	4.49	4.0%	7.5%	0.37	375
TELUS Corp	\$16,838	8	5.0%	15.52	18.2%	6.8%	2.93	27,674
T-Mobile US Inc	\$80,118	13	15.4%	15.21	8.8%	-7.0%	2.03	61,821
Ubiquiti Networks	\$1,898	7	28.4%	7.76	34.2%	68.4%	56.32	7,644
Vodafone Group PLC	\$51,133	8	-2.8%	57.91	11.0%	5.5%	0.89	82,866
Vtech	\$2,372	13	3.4%	4.37	10.9%	33.0%	5.07	2,741
ZTE	\$17,737	12	3.6%	2.99	4.5%	2.4%	1.83	9,645
<b>MEAN WITH OUTLIERS</b>	<b>\$18,454</b>		<b>4.3%</b>	<b>12.18</b>	<b>11.7%</b>	<b>10.3%</b>	<b>5.37</b>	<b>26,526</b>
<b>MEAN WITHOUT OUTLIERS</b>			<b>3.1%</b>	<b>10.08</b>	<b>11.7%</b>	<b>7.3%</b>	<b>2.52</b>	<b>19,217</b>





## Semiconductor Industry

Solid supply chain practices are a baseline requirement for a semiconductor company sitting three to four levels back in the supply chain. The semiconductor industry met and exceeded this challenge. In this industry, Broadcom wins the Supply Chains to Admire award for five consecutive years, while Taiwan Semiconductor (TSMC) returns to the Winner's Circle for the sixth time.

**Table 27.** Semiconductor Sector Evaluation for the Period of 2012-2021

INDUSTRY: Advanced Semiconductor								
COMPANY INFORMATION		IMPROVEMENT	PERFORMANCE				VALUE	
NAME	2021 REVENUE	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAPITALIZATION
<b>2012 - 2021</b>								
Advanced Semiconductor	\$20,402	6	12.9%	5.79	9.1%	7.8%	0.65	4,922
Advanced Micro Devices	\$16,434	8	12.7%	4.72	2.4%	0.7%	14.16	38,625
Analog Devices	\$7,318	29	10.8%	3.11	27.9%	9.7%	3.45	34,072
Applied Materials Inc	\$23,063	17	9.7%	2.98	20.8%	17.4%	5.24	48,102
Applied Optoelectronics	\$212	3	20.6%	2.07	-3.1%	-0.3%	1.37	268
AXT	\$137	30	4.2%	1.45	4.1%	1.5%	1.16	197
Broadcom	\$27,450	2	31.2%	7.24	19.9%	11.3%	6.05	94,453
Cabot Microelectronics	\$1,200	22	12.2%	3.56	19.0%	8.3%	3.54	2,494
ChipMOS Technologies	\$981	1	4.7%	7.66	12.6%	8.3%	1.35	816
Cirrus Logic	\$1,369	21	17.3%	4.22	17.3%	15.9%	2.86	3,032
DAQO New Energy	\$1,679	19	35.3%	7.44	14.4%	6.5%	1.52	976
Diodes	\$1,805	11	11.9%	3.21	9.0%	6.0%	2.07	1,956
Infineon Technologies AG	\$13,218	19	9.6%	3.48	12.4%	9.7%	3.15	26,067
Intel	\$79,024	22	4.0%	4.01	28.2%	16.2%	2.66	183,452
Lam Research Corp	\$14,626	13	18.3%	3.24	19.7%	15.9%	5.53	31,770
Marvell Technology Products	\$2,969	10	-1.1%	5.40	7.3%	4.1%	2.17	17,494
Microchip Technology Inc	\$5,438	26	15.2%	3.19	18.3%	6.7%	5.05	19,597
Micron Technology Inc	\$27,705	22	17.1%	3.57	18.6%	13.1%	1.89	43,704
NVIDIA Corp	\$16,675	7	18.2%	4.41	22.4%	19.9%	11.30	150,415
NXP Semiconductor	\$11,063	15	11.4%	3.68	9.8%	6.4%	7.95	30,057
ON Semiconductor Corp	\$6,740	25	8.1%	2.97	10.6%	6.6%	3.25	8,914
Qualcomm	\$33,566	11	9.6%	6.00	23.9%	16.3%	10.11	116,869
Ricoh	\$15,867	27	-3.3%	6.33	3.1%	0.6%	1.73	16,090
Semtech	\$595	16	3.2%	3.43	10.2%	3.7%	4.21	2,800
Silicon Laboratories Inc	\$721	4	6.3%	4.58	2.6%	13.9%	3.41	3,643
Skyworks Solutions Inc	\$5,109	4	15.2%	3.88	28.2%	21.8%	4.02	15,214
Taiwan Semiconductor	\$56,818	8	15.0%	6.45	38.3%	21.7%	4.75	245,034
Texas Instruments	\$18,344	27	3.4%	2.99	37.3%	26.6%	8.78	90,295
Tower Semiconductor	\$1,508	13	11.5%	6.72	6.1%	3.9%	2.36	1,860
United Microelectronics	\$7,624	18	7.2%	6.67	7.3%	5.7%	1.14	9,046
<b>MEAN WITH OUTLIERS</b>	<b>\$13,989</b>		<b>11.8%</b>	<b>4.48</b>	<b>15.3%</b>	<b>10.2%</b>	<b>4.23</b>	<b>41,408</b>
<b>MEAN WITHOUT OUTLIERS</b>			<b>11.8%</b>	<b>4.48</b>	<b>15.3%</b>	<b>10.2%</b>	<b>4.23</b>	<b>29,062</b>

## 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. 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. For the industry, supply chain excellence remains elusive.

**Table 28.** Tire Sector Evaluation for the Period of 2012-2021

INDUSTRY: Tires								
COMPANY INFORMATION		IMPROVEMENT	PERFORMANCE				VALUE	
NAME	2021 REVENUE	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAPITALIZATION
2012 - 2021								
Bridgestone	\$29,585	1	-2.0%	3.81	11%	9.3%	1.41	27,562
Cooper-Standard Holdings Co	\$2,330	4	-1.5%	16.93	4%	1.5%	1.58	1,040
Goodyear Tire & Rubber	\$17,478	3	-1.6%	4.61	7%	5.6%	2.14	5,864
Michelin	\$28,154	2	0.1%	3.36	12%	9.8%	1.08	14,558
<b>MEAN WITH OUTLIERS</b>			<b>-2%</b>	<b>4.42</b>	<b>9%</b>	<b>9%</b>	<b>1.63</b>	<b>11,575</b>
<b>MEAN WITHOUT OUTLIERS</b>			<b>-2%</b>	<b>4.42</b>	<b>9%</b>	<b>9%</b>	<b>1.63</b>	<b>11,575</b>



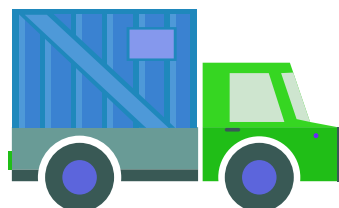
## Trucks and Heavy Equipment

For 2022, Paccar is a Supply Chains to Admire Award winner in the Trucks and Heavy Equipment sector. As a clear industry leader, Paccar wins for four consecutive years. Prior winners included Cummins, John Deere, and United Tractors.

From 2012 to 2021, Operating Margins increased from 8 to 9% while Inventory Turns decreased by 12%.

**Table 29.** Trucks and Heavy Equipment Sector Evaluation for the Period of 2012-2021

INDUSTRY: Trucks & Heavy Equipment								
COMPANY INFORMATION		IMPROVEMENT	PERFORMANCE				VALUE	
NAME	2021 REVENUE	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAPITALIZATION
<b>2012 - 2021</b>								
Agco Corp	\$11,138	8	3.2%	3.88	6.5%	8.3%	1.74	5,513
Caterpillar	\$50,971	10	-0.3%	3.15	10.7%	7.0%	4.56	72,410
Cummins	\$24,021	16	3.5%	4.97	10.1%	16.9%	3.35	25,359
Deere & Company	\$43,582	7	4.2%	5.17	11.8%	6.1%	4.67	49,782
Hitachi Construction	\$7,672	5	0.4%	2.54	7.2%	4.0%	0.59	2,678
Hyster-Yale Materials Handling Inc	\$3,076	5	2.3%	5.04	2.4%	8.5%	2.23	1,057
Komatsu	\$20,654	17	0.7%	2.33	11.5%	7.2%	1.20	18,207
Konecranes Oyj	\$3,761	12	4.6%	2.73	5.9%	7.5%	1.27	1,567
Kubota	\$20,022	14	8.2%	3.42	11.2%	6.5%	1.87	20,501
Manitowoc	\$1,720	10	-5.1%	3.24	4.0%	-0.7%	0.99	665
Oshkosh Truck	\$7,737	3	0.9%	5.49	7.1%	10.8%	2.11	4,926
PACCAR Inc	\$23,522	1	4.8%	16.53	10.5%	8.9%	2.89	23,285
Terex Corp	\$3,887	3	-3.0%	3.72	5.9%	3.8%	2.07	2,948
Textron Inc	\$12,382	15	1.2%	2.97	7.5%	7.8%	2.29	11,734
Traton SE	\$36,229	1	2.4%	1.78	1.8%	0.8%	0.08	1,254
United Tractors	\$5,532	9	1.1%	5.87	16.4%	13.8%	1.87	6,288
Volvo AB	\$43,488	12	-0.3%	5.13	7.6%	6.9%	1.28	18,996
<b>MEAN WITH OUTLIERS</b>	<b>\$18,788</b>		<b>1.7%</b>	<b>4.59</b>	<b>8.1%</b>	<b>7.3%</b>	<b>2.06</b>	<b>15,716</b>
<b>MEAN WITHOUT OUTLIERS</b>			<b>1.7%</b>	<b>3.84</b>	<b>8.1%</b>	<b>6.7%</b>	<b>2.06</b>	<b>15,716</b>



# Process Industry Overview

Peer groups within the process industry manage flows. The most severe degradation of results occurred in the process industry over the last decade. The reason why? These industries have a strong dependency on oil and other commodities with extreme volatility.

Process industries tend to be large (greater than 15B\$ in annual revenue) with a historical focus on manufacturing excellence. With a historic bias to marketing and sales-driven processes, no company in the industry uses channel data well. Table 30 shows the cut-off for each sector for the Supply Chain Index, along with details of progress in the process industries.

**Table 30.** Overview of the Process Industry

PROCESS	Number of Companies	Average Revenue (M\$)	Year-over-Year Growth	Inventory Turns	Operating Margin	Return on Invested Capital	Price to Book Value
		Average for 2012-2021					
Beverages	20	\$3,286	0.4%	5.74	9.7%	6.3%	1.69
Chemical	37	\$12,165	1.6%	4.21	10.6%	8.1%	2.61
Consumer Nondurables	11	\$18,618	1.9%	4.76	16.5%	14.5%	28.75
Containers and Packaging	19	\$8,427	5.4%	6.39	10.1%	7.1%	3.65
Food Manufacturing	31	\$17,725	4.5%	6.27	9.8%	7.1%	2.95
Pharmaceuticals	32	\$28,322	5.4%	2.24	21.2%	12.8%	6.21
Personal Products	14	\$9,068	3.5%	2.76	11.2%	10.4%	4.13



## Beverages

Beverage companies are in intense competition for a "share of the throat." For 2022, Monster Beverages returns to the Winners Circle. Prior winners include Boston Beer and Coca-Cola. In general, in this industry, smaller, regional companies outperform larger, global multinationals.

Overall profitability of the beverage industry increased in 2019 to 18%, but was not sustained through the pandemic falling to 17%. Inventory turns declined 24%. The companies struggle to manage a balanced scorecard.

**Table 31.** Beverage Industry Performance and Sector Evaluation for the Period of 2012-2021

INDUSTRY: Beverages								
COMPANY INFORMATION		IMPROVEMENT	PERFORMANCE				VALUE	
NAME	2021 REVENUE	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAPITALIZATION
<b>2012 - 2021</b>								
Anheuser-Busch InBev	\$54,304	7	3.8%	5.37	30.1%	5.6%	3.18	164,455
Boston Beer Co	\$2,058	11	15.7%	7.39	13.4%	20.5%	7.28	4,117
Brown-Forman	\$3,461	17	3.0%	0.91	32.2%	22.0%	12.49	23,346
Carlsberg	\$10,603	13	-0.8%	7.42	14.3%	5.2%	2.34	17,492
Coca-Cola	\$38,655	5	-1.5%	5.18	24.7%	10.9%	8.72	201,925
Davide Campari-Milano	\$2,571	18	4.2%	1.00	19.9%	6.8%	4.33	9,641
Diageo	\$17,139	15	1.1%	0.96	27.7%	12.4%	7.84	85,797
Heineken International	\$25,960	7	3.2%	7.94	12.5%	6.5%	3.16	50,977
Keurig Dr Pepper	\$12,683	1	8.7%	10.03	20.1%	10.1%	4.57	25,832
Kirin Holdings	\$16,602	19	-4.1%	5.42	7.0%	5.2%	1.99	15,677
Lassonde Industries Inc	\$1,893	13	10.1%	4.40	7.5%	7.7%	2.15	1,140
Molson Coors Brewing	\$10,280	1	15.9%	9.71	12.2%	3.9%	1.32	13,149
Monster Beverage	\$5,541	5	12.6%	5.47	31.6%	28.8%	9.30	29,001
PepsiCo	\$79,474	12	1.9%	9.31	14.9%	14.2%	10.88	162,913
Primo Water Co	\$2,073	4	1.7%	7.80	4.3%	1.2%	1.69	1,634
Remy Cointreau	\$1,179	20	0.3%	0.34	19.8%	7.3%	3.01	4,826
Thai Beverage	\$7,687	15	7.4%	3.64	13.9%	11.9%	3.62	12,923
Tsingtao Brewery	\$4,672	3	3.0%	6.39	7.3%	10.3%	3.31	8,840
United Breweries	\$3,286	9	8.0%	4.08	12.9%	11.3%	2.51	4,095
Yakult Honsha Co	\$3,638	10	0.4%	5.74	9.7%	6.3%	1.69	5,404
<b>MEAN WITH OUTLIERS</b>			<b>5%</b>	<b>5.26</b>	<b>17.4%</b>	<b>10.4%</b>	<b>4.34</b>	<b>38,960</b>
<b>MEAN WITHOUT OUTLIERS</b>	<b>\$13,264.16</b>		<b>5%</b>	<b>5.26</b>	<b>0.17</b>	<b>10.4%</b>	<b>4.34</b>	<b>17,387</b>

## Chemical

Supply chain management is essential to a chemical company's success when sitting three and four levels back in the value chain. Ecolab falls out of the Winner's Circle and Celanese reclaims the spot for the third year. No chemical company has sustained the Supply Chains to Admire winning status.

In the pandemic the chemical companies scraped to grow by 23% after six years of negative sector growth. Operating margin improved from 7 to 14% while inventory turns declined from 5.5 to 4.3.

**Table 32.** Chemical Industry Performance and Sector Evaluation for the Period of 2012-2021

INDUSTRY: Chemical								
COMPANY INFORMATION		IMPROVEMENT	PERFORMANCE				VALUE	
NAME	2021 REVENUE	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAPITALIZATION
2012 - 2021								
Air Products and Chemicals Inc	\$10,323	8	1.3%	13.76	20.1%	10.5%	3.83	37,461
Akzo Nobel	\$11,343	17	-4.7%	4.92	8.7%	10.2%	2.50	18,755
Albemarle Corp	\$3,328	33	2.0%	3.54	18.5%	7.5%	3.09	10,439
Arkema SA	\$11,263	32	3.6%	0.00	9.6%	7.2%	1.58	7,527
Asahi Kasei Corp	\$19,867	29	1.2%	3.89	8.0%	7.1%	1.19	12,888
Ashland Global Holdings	\$2,111	2	-9.2%	3.78	4.2%	2.2%	1.27	4,183
Axalta Coating Systems Ltd	\$4,416	8	0.7%	4.97	8.9%	1.3%	4.26	5,364
BASF	\$92,996	34	0.2%	4.55	9.0%	9.6%	2.12	78,870
Cabot	\$3,409	19	2.3%	5.43	9.8%	3.1%	2.37	2,913
Celanese Corp	\$8,537	12	3.8%	5.52	14.3%	15.4%	4.25	11,987
Chemours Co	\$6,345	3	-1.5%	4.27	10.2%	7.6%	4.90	3,153
Covestro	\$18,816	1	4.0%	4.54	9.3%	14.1%	1.30	7,632
Dow Inc	\$16,653	7	-2.5%	4.22	9.3%	6.3%	1.46	51,419
Eastman Chemical	\$10,476	23	4.3%	4.84	14.8%	8.4%	2.62	11,860
Ecolab	\$12,733	8	8.4%	5.44	14.0%	6.7%	5.83	41,790
Evonik Industries	\$17,694	35	-0.7%	5.01	9.7%	11.9%	0.77	7,457
FMC	\$5,045	22	7.3%	2.58	15.7%	10.4%	4.29	9,442
Givaudan	\$7,313	16	5.2%	3.14	16.3%	11.4%	6.23	23,169
H.B. Fuller	\$3,278	20	9.3%	6.05	7.8%	5.5%	2.35	2,533
Huntsman Corp	\$8,453	11	-1.4%	5.34	8.2%	8.5%	2.38	5,339
International Flavors & Fragrances	\$11,656	24	19.5%	2.86	15.3%	9.8%	4.12	12,969
Johnson Matthey PLC	\$20,492	17	3.7%	12.32	4.1%	11.3%	1.44	4,501
K+S	\$3,802	24	-1.7%	3.84	9.5%	7.6%	0.97	4,526
Kansai Paint Co., Ltd	\$3,440	27	2.9%	4.73	8.8%	6.2%	0.84	2,168
Koninklijke	\$10,890	14	-1.1%	3.21	9.0%	7.5%	2.52	15,859
Lanxess	\$8,941	37	-2.4%	4.19	7.2%	5.3%	1.41	4,209
LyondellBasell	\$46,173	38	2.2%	6.95	13.5%	22.4%	4.20	35,586
Mitsui Chemicals Inc	\$11,430	14	-2.8%	4.43	4.9%	3.3%	0.48	2,797

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INDUSTRY: Chemical (Continued from previous page)								
COMPANY INFORMATION		IMPROVEMENT	PERFORMANCE				VALUE	
NAME	2021 REVENUE	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAPITALIZATION
<b>2012 - 2021</b>								
Nippon Kayaku	\$1,636	12	-0.8%	2.33	11.5%	6.5%	0.40	740
Nitto Denko	\$7,182	30	0.9%	5.78	11.6%	9.9%	1.07	5,936
PPG	\$16,802	35	4.0%	4.56	11.4%	15.7%	5.27	28,566
RPM International Inc	\$6,106	31	6.3%	4.32	10.4%	8.8%	4.88	6,981
Sensient Technologies	\$1,380	6	-0.3%	2.15	12.0%	7.4%	3.09	2,900
Solvay	\$13,530	26	3.6%	5.22	9.5%	3.1%	0.58	5,633
Stepan Company	\$2,346	20	2.8%	8.15	7.2%	9.9%	2.41	1,773
Symrise AG	\$4,526	4	7.5%	2.56	14.3%	8.5%	4.96	10,759
Wacker Chemie	\$5,359	28	-2.4%	4.84	7.0%	4.7%	1.89	5,199
<b>MEAN WITH OUTLIERS</b>	<b>\$12,165</b>		<b>2.0%</b>	<b>4.82</b>	<b>10.6%</b>	<b>8.5%</b>	<b>2.68</b>	<b>13,656</b>
<b>MEAN WITHOUT OUTLIERS</b>			<b>1.6%</b>	<b>4.21</b>	<b>10.6%</b>	<b>8.1%</b>	<b>2.61</b>	<b>9,800</b>



## 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 like Clorox made progress. The Clorox Company places into the Winners Circle for the third time.

Large global multinational cross-functional alignment issues grew over the decade, driving a schism between operations and commercial teams. Operating margins were flat at 10% but inventory turns increased 32% largely driven by product complexity.

**Table 33.** Consumer Non-Durables Industry Performance for the Period of 2012-2021

INDUSTRY: Household Non-Durable								
COMPANY INFORMATION		IMPROVEMENT	PERFORMANCE				VALUE	
NAME	2021 REVENUE	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAPITALIZATION
<b>2012 - 2021</b>								
Church & Dwight Co	\$5,190	6	6.6%	6.43	19.8%	14.3%	5.77	14,191
Clorox	\$7,341	5	3.5%	7.42	17.8%	24.3%	61.67	17,208
Colgate-Palmolive	\$17,421	7	0.5%	4.90	23.7%	30.1%	105.92	61,013
Energizer Holdings Inc	\$3,022	1	4.5%	1.51	14.4%	6.1%	9.34	1,948
Henkel AG & Co	\$23,742	12	1.0%	5.15	13.6%	10.9%	2.83	46,651
Kimberly-Clark	\$19,440	7	-0.6%	6.46	14.4%	21.3%	140.93	42,118
Newell Rubbermaid	\$10,589	10	8.0%	4.26	9.8%	1.6%	3.04	10,844
Procter & Gamble	\$76,118	4	-0.5%	6.60	20.1%	12.1%	4.92	259,816
Reckitt Benckiser Group	\$18,207	9	2.1%	4.53	25.0%	14.3%	5.39	59,495
Spectrum Brands Holdings	\$2,998	3	1.3%	3.61	8.2%	2.1%	3.13	2,760
Tupperware Brands	\$1,602	10	-4.4%	2.68	14.6%	12.4%	8.79	2,431
Unilever PLC	\$62,051	2	-0.4%	5.51	16.4%	17.4%	7.75	132,199
<b>MEAN WITH OUTLIERS</b>	<b>\$20,643</b>		<b>1.8%</b>	<b>4.92</b>	<b>16.5%</b>	<b>13.9%</b>	<b>29.96</b>	<b>54,223</b>
<b>MEAN WITHOUT OUTLIERS</b>			<b>1.8%</b>	<b>4.92</b>	<b>16.5%</b>	<b>13.9%</b>	<b>18.36</b>	<b>35,532</b>





## Containers and Packaging

For 2022, CCL places in the Winners Circle for the Supply Chains to Admire analysis.

During the pandemic, growth went from 1 to 12% while margins remained flat and inventory turns declined by 30%. Starting the decade with maturing processes, the gradual sophistication in supply chain processes helped the industry.

**Table 34.** Containers and Packaging Industry Performance and Sector Evaluation for the Period of 2012-2021

INDUSTRY: Containers & Packaging								
COMPANY INFORMATION		IMPROVEMENT	PERFORMANCE				VALUE	
NAME	2021 REVENUE	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAPITALIZATION
<b>2012 - 2021</b>								
Amtcor	\$12,861	4	0.3%	5.57	8.5%	7.9%	7.92	13,407
AptarGroup	\$3,227	19	3.5%	4.95	12.6%	8.9%	3.84	5,646
Ball Corp	\$13,811	8	5.2%	6.60	10.0%	6.2%	6.60	15,785
Berry Plastics Group	\$13,850	4	12.3%	6.42	9.2%	3.7%	4.88	5,627
CCL Industries	\$5,733	7	17.2%	8.08	13.6%	10.4%	3.59	7,658
Crown Holdings	\$11,394	18	3.5%	5.49	11.1%	6.3%	168.09	8,339
Graphic Packaging Holding	\$7,156	10	6.0%	5.69	8.9%	5.0%	3.26	4,126
GREIF	\$5,556	8	3.3%	9.89	8.7%	5.5%	2.46	2,804
International Paper	\$19,363	4	-2.3%	6.48	9.8%	5.8%	3.29	19,426
Intertape Polymer Group	\$1,919	2	9.6%	5.05	8.9%	10.8%	3.66	1,125
Orora Ltd	\$2,641	1	1.6%	4.48	1.0%	5.9%	1.68	1,581
Owens-Illinois	\$6,357	17	-1.3%	5.45	9.6%	2.7%	5.89	3,135
Packaging Corporation of America	\$7,730	14	12.7%	6.60	14.6%	12.2%	4.15	8,739
Sealed Air	\$5,534	3	2.2%	6.03	12.9%	6.3%	14.02	7,408
Silgan Holdings	\$5,677	13	5.1%	5.70	9.0%	7.5%	3.95	3,348
Smurfit Kappa Group PLC	\$11,958	14	2.1%	7.33	10.0%	4.7%	1.98	6,703
Sonoco Products	\$5,590	12	2.3%	9.40	8.8%	7.1%	2.93	4,940
Westrock	\$18,746	10	14.7%	7.18	7.7%	4.3%	0.76	8,318
Wipak	\$1,002	16	4.5%	5.00	16.7%	13.0%	1.16	1,085
<b>MEAN WITH OUTLIERS</b>			<b>6%</b>	<b>6.49</b>	<b>10.0%</b>	<b>0.07</b>	<b>12.43</b>	<b>6,095</b>
<b>MEAN WITHOUT OUTLIERS</b>	<b>\$7,756</b>		<b>6%</b>	<b>6.49</b>	<b>10.0%</b>	<b>0.07</b>	<b>3.82</b>	<b>6,095</b>

## Food

In the Supply Chains to Admire 2022 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.

**Table 35.** Food Manufacturing Sector Evaluation for the Period of 2012-2021

INDUSTRY: Food								
COMPANY INFORMATION		IMPROVEMENT	PERFORMANCE				VALUE	
NAME	2021 REVENUE	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAPITALIZATION
2012 - 2021								
Archer Daniel Midland	\$85,249	2	4.6%	6.36	2.8%	6.2%	1.37	26,485
B&G Foods	\$2,056	25	14.8%	3.39	15.9%	4.6%	3.25	1,900
Bunge Ltd	\$59,152	1	1.7%	8.25	1.8%	3.4%	1.53	10,329
Campbell Soup	\$8,476	25	2.6%	5.50	15.7%	12.0%	8.89	14,031
Charoen Pokaphan Foods PLC	\$16,032	29	10.8%	4.80	3.5%	3.7%	0.97	4,379
ConAgra Foods	\$11,185	9	-0.2%	5.08	10.5%	4.3%	2.59	14,003
Danone SA	\$28,729	7	0.9%	7.72	13.8%	6.8%	2.73	43,916
Ebro Foods SA	\$2,867	24	1.4%	2.76	10.1%	6.4%	0.94	2,182
Flowers Foods Inc	\$4,331	20	4.8%	11.77	7.2%	8.7%	3.64	4,357
Fresh Del Monte Produce Inc	\$4,252	31	1.8%	7.08	3.5%	4.0%	1.01	1,789
Freshpet	\$425	6	26.3%	7.36	-7.6%	-12.9%	6.36	1,506
General Mills	\$18,127	18	2.1%	7.17	16.5%	10.3%	5.40	32,551
Glanbia	\$4,966	14	7.3%	5.91	6.7%	10.9%	1.88	2,733
Golden Agri-Resources	\$10,183	9	6.6%	6.23	4.6%	2.4%	0.53	2,799
Grupo Nutresa SA	\$3,411	5	19.6%	6.62	9.4%	7.8%	0.51	1,219
Hershey	\$8,971	17	4.0%	5.37	20.1%	21.0%	18.03	25,087
Hormel Foods	\$11,386	15	3.9%	7.43	11.1%	15.9%	3.95	19,103
Ingredion Incorporated	\$6,894	10	0.7%	6.12	11.4%	8.9%	2.59	6,606
Kellogg Co	\$14,181	12	0.8%	6.92	11.6%	10.3%	8.80	22,712
Maple Leaf Foods	\$3,606	19	-2.0%	7.64	3.2%	8.9%	1.58	2,380
McCormick	\$6,318	4	5.6%	3.63	15.9%	11.6%	5.86	15,525

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INDUSTRY: Food (Continued from previous page)								
COMPANY INFORMATION		IMPROVEMENT	PERFORMANCE				VALUE	
NAME	2021 REVENUE	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAPITALIZATION
<b>2012 - 2021</b>								
Mondelez	\$28,720	27	-2.0%	6.22	13.7%	7.8%	2.44	68,154
Nestle	\$95,704	12	0.2%	5.00	16.5%	12.3%	4.43	266,023
Orkla ASA	\$5,855	16	1.5%	3.45	11.2%	8.5%	1.68	6,988
Pilgrim's Pride Corporation	\$14,777	23	7.1%	8.52	7.0%	14.6%	3.26	5,630
Post Holdings Inc	\$6,227	21	26.5%	6.69	10.3%	0.2%	1.68	4,624
Smucker's	\$8,003	10	5.8%	4.65	16.3%	6.2%	1.81	12,444
The Hain Celestial Group Inc	\$1,970	30	6.8%	5.21	8.2%	2.3%	2.51	3,777
The Kraft Heinz Co	\$26,042	21	4.1%	5.73	19.3%	4.7%	3.07	56,329
Tree House Food Inc	\$4,328	28	10.9%	5.09	5.9%	-0.6%	1.53	2,856
Tyson Foods Inc	\$47,049	3	4.1%	10.66	6.3%	9.2%	1.87	21,244
<b>MEAN WITH OUTLIERS</b>	<b>\$17,725</b>		<b>5.9%</b>	<b>6.27</b>	<b>9.8%</b>	<b>7.1%</b>	<b>3.44</b>	<b>22,699</b>
<b>MEAN WITHOUT OUTLIERS</b>			<b>4.5%</b>	<b>6.27</b>	<b>9.8%</b>	<b>7.1%</b>	<b>2.95</b>	<b>14,588</b>



## Personal Products

Ten years after the end of the recession, margins in this industry are flat, but there are increasing product complexity and shifts in the channel. During the pandemic volume increased from a growth rate of a -2% to 13%. Last year, L'Oréal, the Supply Chains to Admire Award Winner for five consecutive years, stumbled on growth and falls out of the Winner's Circle. The industry operates on 11% margin.

**Table 36.** Personal Products Sector Evaluation for the Period of 2012-2021

INDUSTRY: Personal Products								
COMPANY INFORMATION		IMPROVEMENT	PERFORMANCE				VALUE	
NAME	2021 REVENUE	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAPITALIZATION
2012 - 2021								
Beiersdorf	\$9,024	9	1.6%	3.28	13.8%	13.5%	2.37	14,938
Coty	\$4,630	1	3.7%	2.63	4.4%	-3.7%	9.88	7,793
Estee Lauder	\$16,215	8	6.5%	1.73	16.1%	19.8%	11.55	53,950
Henkel AG & Co	\$23,742	9	1.0%	5.15	13.6%	10.9%	2.83	46,651
Herbalife Ltd	\$5,803	12	5.7%	2.42	12.9%	26.4%	8.51	5,486
Inter Parfums	\$880	1	5.8%	1.73	13.6%	9.6%	3.33	1,533
Kao Corporation	\$12,931	6	-1.4%	4.24	11.8%	13.0%	2.15	16,198
L'Oreal	\$38,202	13	3.3%	2.85	17.9%	14.4%	4.48	136,385
Natures Sunshine Products	\$444	14	2.1%	2.11	4.8%	8.6%	1.87	246
Nu Skin Enterprises	\$2,696	11	6.2%	1.94	12.4%	17.5%	3.94	3,220
Ocean Bio-Chem Inc	\$64	3	9.5%	2.59	10.5%	11.1%	1.56	45
PZ Cussons PLC	\$805	4	-4.2%	3.32	12.2%	6.3%	1.43	857
Revlon Inc	\$2,079	7	5.4%	2.82	7.7%	-6.5%	0.00	1,178
Shiseido Co Ltd	\$9,435	5	3.4%	1.86	5.9%	4.8%	3.98	15,887
<b>MEAN WITH OUTLIERS</b>			<b>3%</b>	<b>2.8</b>	<b>11.3%</b>	<b>11%</b>	<b>4.01</b>	<b>19,060</b>
<b>MEAN WITHOUT OUTLIERS</b>	<b>\$8,165.0</b>		<b>3%</b>	<b>2.8</b>	<b>11.3%</b>	<b>11%</b>	<b>4.01</b>	<b>11,524</b>

## Pharmaceuticals

The pharmaceutical industry stalled post-recession, accelerated improvement in the period of 2012-2021. AbbVie pharmaceutical, a biologics manufacturer, places into the Winner's Circle for the fourth consecutive year. The Company is a spin-off of Abbott Labs.

In general, sector margins continue to grow, but supply chain competency lags other process sectors. The Pharmaceutical industry is the most profitable industry sector at 22% margin.

**Table 37.** Pharmaceuticals Sector Evaluation for the Period of 2012-2021

INDUSTRY: Pharmaceutical								
COMPANY INFORMATION		IMPROVEMENT	PERFORMANCE				VALUE	
NAME	2021 REVENUE	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	PRICE TO BOOK	MARKET CAP
<b>2012 - 2021</b>								
Abbott Laboratories	\$43,075	10	7.8%	3.28	12.6%	8.1%	3.82	112,095
AbbVie Inc	\$56,197	3	12.9%	4.22	31.2%	16.4%	18.75	128,931
Amgen	\$25,979	10	5.3%	1.44	37.6%	12.3%	8.12	115,350
Aspen Pharmacare Holdings Ltd	\$2,457	18	4.7%	1.66	25.2%	7.2%	1.41	4,688
Astellas Pharma Inc	\$11,787	22	0.7%	2.15	15.4%	12.1%	2.83	33,945
AstraZeneca plc	\$37,417	28	2.1%	1.97	11.0%	7.8%	5.72	100,413
Baxter International Inc.	\$12,784	4	0.0%	3.44	10.5%	13.0%	3.59	30,178
Bayer	\$52,156	8	0.8%	1.98	11.3%	6.3%	2.71	85,496
Biogen Idec Inc.	\$10,982	22	9.1%	1.63	40.3%	21.3%	5.01	53,560
Biomarin Pharmaceutical Inc	\$1,846	31	15.8%	0.60	-15.8%	-4.0%	5.81	13,916
Bristol-Myers Squibb Co.	\$46,385	4	9.8%	3.85	16.7%	9.0%	5.34	104,958
Catalent Inc	\$3,998	1	10.5%	5.64	13.1%	3.4%	4.08	6,878
Daiichi Sankyo Co Ltd	\$9,080	9	-1.6%	1.99	9.7%	6.7%	2.23	25,401
Eli Lilly and Company	\$28,318	21	1.9%	1.56	22.6%	18.3%	14.86	113,061
Gilead Sciences	\$27,305	2	17.0%	3.39	48.4%	21.2%	5.82	97,070
GlaxoSmithKline	\$46,932	30	0.8%	1.94	19.6%	14.4%	66.81	103,640
Ipsen SA	\$3,548	13	8.1%	2.55	21.6%	13.3%	3.68	6,462
Johnson & Johnson	\$93,775	15	3.8%	2.89	26.2%	15.4%	4.89	330,941
Mallinckrodt PLC	\$2,209	32	3.7%	0.00	7.9%	-6.3%	0.82	3,174
Merck and Company	\$48,704	26	0.4%	2.61	18.6%	10.9%	4.71	165,272
Novartis AG	\$52,877	15	-0.9%	2.41	19.8%	12.3%	2.87	196,588
Novo Nordisk A/S	\$22,404	19	6.2%	1.24	41.7%	68.1%	16.72	135,525
Perrigo Co PLC	\$4,139	20	7.8%	3.13	12.9%	0.2%	1.92	12,220
Pfizer, Inc.	\$81,288	12	6.1%	1.62	25.0%	12.6%	3.09	210,286
Regeneron Pharmaceuticals Inc	\$16,072	6	51.4%	1.24	37.2%	29.6%	9.15	42,444
Roche Holding	\$62,209	15	2.7%	2.02	29.5%	23.1%	9.55	243,020
Sanofi S.A.	\$46,351	29	-0.4%	1.58	20.6%	7.1%	1.72	119,423
Santen Pharmaceutical Co Ltd	\$2,355	27	6.3%	2.63	19.9%	10.9%	2.78	6,211
Teva Pharmaceutical Industries Limited	\$15,879	25	-1.1%	2.06	19.7%	-2.0%	1.30	27,751
United Therapeutics Corp	\$1,686	13	9.1%	1.62	39.7%	20.5%	3.04	5,924
Zoetis Inc	\$7,776	7	6.4%	1.26	27.5%	13.7%	17.88	42,124
<b>MEAN WITH OUTLIERS</b>	<b>\$28,322</b>		<b>5.4%</b>	<b>2.24</b>	<b>21.2%</b>	<b>12.8%</b>	<b>6.21</b>	<b>84,234</b>
<b>MEAN WITHOUT OUTLIERS</b>			<b>5.4%</b>	<b>2.24</b>	<b>21.2%</b>	<b>12.8%</b>	<b>6.21</b>	<b>84,234</b>

# 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 2012-2021 to help companies see the pattern of the entire decade. ✿



# Calculations

The methodology used to define the 2022 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 found NAICS and SIC codes inadequate). After much debate, we defined 28 peer groups, assigned companies to their respective industry sectors, and started analyzing 460 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 2012-2021 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 Tangible 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. We know that the performance metrics selected have the highest correlation to market capitalization from our work with Arizona State University based on prior research
4. **Start the Analysis.** To complete the analysis, we collected publicly available data from balance sheets and income statements. We used YCharts, a syndicated data provider of the balance sheet, and income statement data for this analysis. 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, we calculated the mean, adjusted for outliers, and then 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, as will be explained in detail in this report.

To understand the methodology completely, it is essential to note what the analysis 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. The work 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. An example is customer service. While we firmly believe that the analysis should include customer service in the performance metrics, we cannot find a reliable data source. ❁

<sup>2</sup> Supply Chain Index, published by Supply Chain Insights, <http://supplychaininsights.com/research>, July 12, 2017

# 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.

**Figure 5.** The Supply Chains to Admire Analysis Criteria



**Figure 6.** Calculation Example

COMPANY INFORMATION	IMPROVEMENT	VALUE		PERFORMANCE			RESULTS	
NAME	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%	<b>WINNER</b>
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								



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 11 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 sectors 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.<sup>3</sup>
- **Margin of Error:** To determine the allowable distances from the industry peer group mean for the value and performance metrics (Market Capitalization, Price to 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.<sup>4</sup>
- **Supply Chain Index:** The Supply Chain Index is a ranking within an industry peer group across three measurements:
  1. **Balance** -r 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. ✨



<sup>3</sup> Major outliers were calculated according to this formula: <http://www.wikihow.com/Calculate-Outliers>

<sup>4</sup> Margin of error formula: <http://www.dummies.com/education/math/statistics/how-to-calculate-the-margin-of-error-for-a-sample-mean/>

# Prior Reports in this Series

In the eight years of the history of Supply Chain Insights, we have been zealous in figuring out what drives value in supply chains. As we learn, we improve our methodology. On our website, you can track our progress and find industry-specific information published by [Supply Chain Insights](#). ✨



# About Supply Chain Insights LLC

Founded in February 2012, [Supply Chain Insights LLC](#) delivers independent, actionable, and objective advice for supply chain leaders. The company provides research to help companies gain a first-mover advantage ❁



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# Congratulations to the 2022 Supply Chains to Admire Winners



**APPLE**



**ABBVIE INC.**



**ASSA  
ABLOY AB**



**AMETEK**



**BROADCOM**



**CLL INDUSTRIES**



**CELANESE**



**CLOROX**



**INTUITIVE  
SURGICAL, INC.**



**HUBBLE**



**LOCKHEED  
MARTIN CORP.**



**KONINKLIJKE  
AHOLD DELHAIZE  
NV**



**MONSTER  
BEVERAGES**



**NIKE INC.**



**NORTHROP  
GRUMMAN**



**PACCAR INC.**



**RESMED**



**ROSS STORES**



**SLEEP NUMBER**



**SUBARU**



**TAIWAN SEMICONDUCTOR  
MANUFACTURING (TSMC) COMPANY**



**TORO**