Supply Chains
To Admire™
2023

Supply Chain Insights™

A TEN-YEAR VIEW OF PROGRESS
ON SUPPLY CHAIN EXCELLENCE

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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 6.5 percent of public companies succeed.

The Supply Chains to Admire™ methodology evaluates the progress of public companies over ten years. The analysis includes over five hundred and twenty-one public companies within twenty-six industry sectors. We design this report to meet 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 2013-2022. 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.

6. Understand industry patterns and sector potential over time.

7. Harvest insights from the stories of supply chain leaders that outperform their industry sector.

In the 2023 analysis, thirty-four companies met the **Supply Chains to Admire Award** criteria for improvement, performance, and value. The winners include *Apple*, *Assa Abloy AB*, *BorgWarner*, *CCL Industries*, *Celanese*, *Cummins Engine*, *CF Industry*, *Decker Outdoors*,

**Figure 1.** Supply Chains to Admire Winners for 2023

Gilead Sciences, *Intuitive Surgical*, *Hubble*, *Huntington Ingalls Industries*, *Leggett & Platt, Lockheed Martin Corporation*, *LyondellBasell*, *Koninklijke Ahold Delhaize NV*, *Monster Beverages*, *Nike Inc.*, *Nvidia*, *Northrup Grumman*, *PACCAR Inc, PCA (Packaging Corporation of America)*, *ResMed*, *Rockwell Automation*, *Ross Stores*, *Taiwan Semiconductor Manufacturing (TSMC) Company*, *Tempur-Pedic*, *TJX*, *Toro*, *Toyota*, *West Pharma*, *United Tractors*, and *Urban Outfitters*. No company met the criteria in eleven of the twenty-eight sectors studied.

There is a stark difference when we compare the list of Supply Chain to Admire Award Winners to the conventional wisdom of industry leaders. While some companies like Apple and Nike are 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-Palmolive, General Mills, Intel, J&J, Nestle, and P&G—do not outperform their peer group on improvement, performance, and driving value. The reason? 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 industry bias. The source is public reporting in global markets. We obtain the information for the report through a syndicated data provider, Y Charts. 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 of the analysis and celebrate the achievements of leaders. ❄
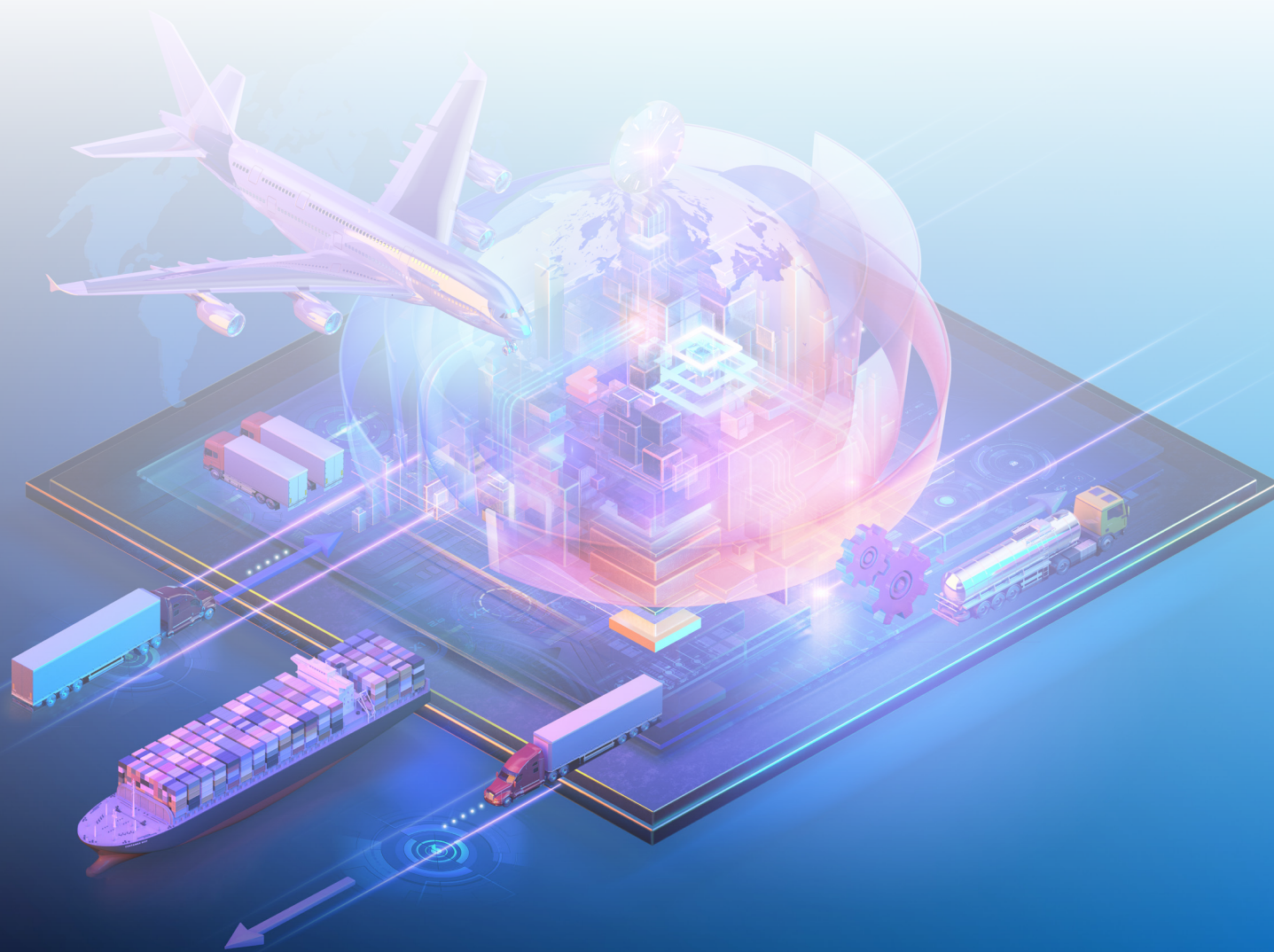
What is the Right Stuff?

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 *superior value in public markets* during 2013-2022. 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 ten years of the analysis, vary by year, the win rate remains constant at 4-7%. 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 see 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 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 focusing on an efficient organization (lowest cost) sub-optimizes overall corporate performance. When focusing on the lowest cost per unit, we find that the strategy is only effective for 20-30% of the supply chain flow.

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 performance can quickly shift when management teams change. In 2013, Alex Blanco, became SVP of Supply Chain for Ecolab. He left in 2020. Over the ten 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 fell out of the winner's circle in 2022. (The Company failed to meet the growth target, and the ROIC results have been below the peer group for four years.) In Figure 2, we show the progress of Ecolab against the industry in 2013-2019 and the slight slide in 2020-2022. Was Alex's departure the reason? Probably not the sole reason. Supply Chain Excellence combines factors, but management changes make performance hard to sustain. The presence of the new executive team with deep experience in 2013 led to a rise in capabilities.

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 launches.

Cost of Goods Sold is less correlated with market capitalization than operating margin.

There are many barriers to beating the peer group in improvement, performance, and value. Smaller, innovative, newer companies focusing on customer value tend to win the Supply Chains to Admire award. Examples of smaller innovative companies winning the award include Monster Beverages and Intuitive Surgical. The retail winners drove excellence through 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. Using 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 definition of the supply chain function is more problematic in Europe than in the Americas. ❁

Figure 2. Orbit Chart: Ecolab Progress Against Peer Group
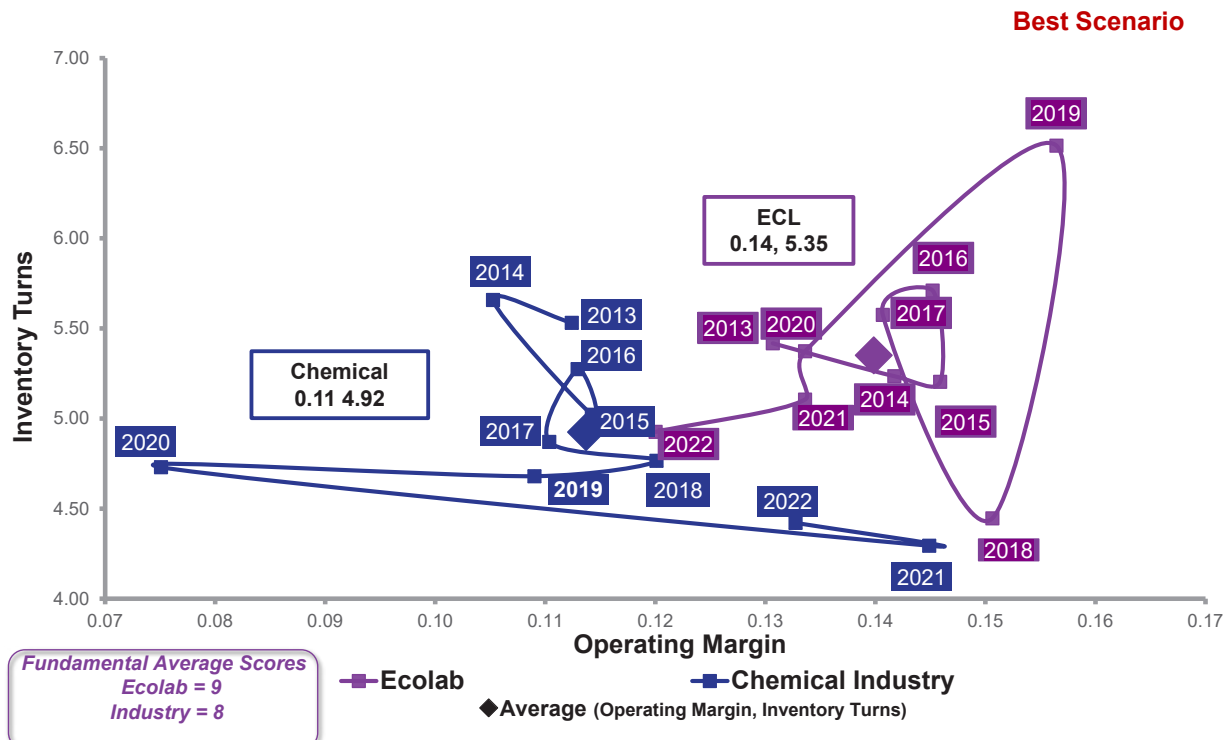
Source: Supply Chain Insights LLC, Corporate Annual Reports 2013-2022 from YCharts

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 the Effective Frontier, as shown in Figure 3.

Figure 3. The Approach: Balanced Scorecard Analysis

marketing practices introduce complexity through product proliferation. These marketing programs also tend to shift and distort demand versus shaping demand by improving market potential (baseline lift). Shifting demand decimates the margin. The more significant the alignment gap between operational and commercial teams, the lower the Company's position in the sector, and the less likely that the Company will meet the Supply Chains to Admire criteria.

Mergers and Acquisitions (M&A) activity in the decade was more significant in process-based companies. No industry sector achieved economy of scale in delivering supply chain performance through M&A through the decade.

 While we wish to include customer service in the Supply Chains to Admire analysis, no industry standard exists for 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, accurately reflect 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.

Over the ten 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

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. ❄
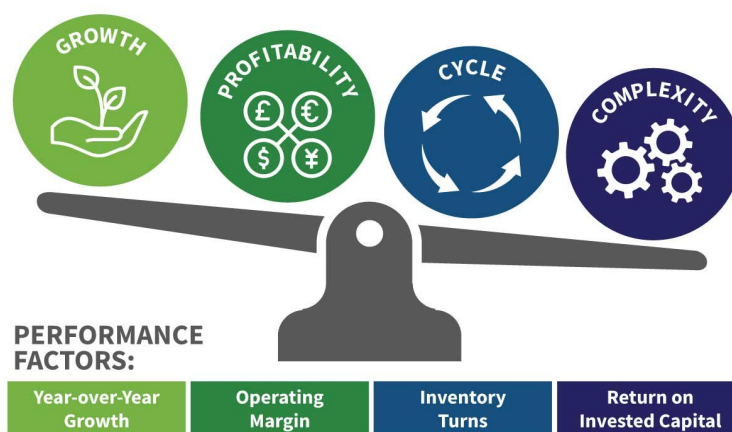
Table 1. Winners Over Time

	COMPANNY	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	TOTAL
Supply Chains to Admire Summary												
		YEARS										**TOTAL**
RETAIL	TJX				X	X	X	X	X		X	6
	Dollar General		X		X	X		X	X			5
	Ross Stores					X	X		X	X	X	5
	Dollar Tree		X	X	X			X				4
	Koninklijke Ahold Delhaize NV						X	X		X	X	4
PROCESS	L'Oreal		X	X	X	X	X	X			X	7
	AbbVie						X	X	X	X		4
	Eastman	X	X			X	X					4
	Abbvie							X	X	X		4
	Celanese					X			X	X	X	4
	Monster					X		X		X	X	4
	PCA				X	X	X				X	4
	Ecolab						X	X	X			3
	The Clorox Company		X	X						X		3
	CCL		X							X	X	3
DISCRETE	Apple				X	X	X	X	X	X	X	8
	TSMC	X		X	X			X	X	X	X	7
	Broadcom				X	X	X	X	X	X		6
	Nike	X	X			X			X	X	X	6
	Paccar					X	X	X	X	X	X	6
	Lockheed Martin						X	X	X	X	X	5
	United Tractors		X	X	X			X			X	5
	Cisco	X	X	X	X							4
	Sleep Number						X	X	X	X		4
	Asso Abloy							X	X	X	X	4
	Intuitive Surgical						X		X	X	X	4
	Toro				X			X		X	X	4
	EMC	X	X	X								3
	Intel	X	X	X								3
	Leggett & Platt				X		X		X			3
	Qualcomm		X	X	X							3
	ResMed					X		X		X		3
	Western Digital		X			X			X			3
	Borg Warner						X	X			X	3
	Cummins				X	X					X	3
	NVIDIA								X	X	X	3
	Rockwell Automation					X		X			X	3

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

Supply Chains to Admire Summary										
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
RETAIL	2	6	6	4	9	5	3	3	2	4
PROCESS	4	5	3	4	11	6	5	4	5	8
DISCRETE	12	23	16	24	31	25	14	13	15	22

Comparison of Methodologies

Client discussions sparked the development of the Supply Chains to Admire methodology. The reason? The industry was frustrated with the Gartner Top 25 approach. Companies wanted a more data-driven approach reflecting industry trends. The concern was that the Gartner Top 25, based 50% on the opinion of analysts and industry leaders, was a popularity contest.

The request was for a data-driven analysis based on corporate financials, allowing a comparison of large and small companies across currencies. The goal was to understand the relative positions of companies within industry peer groups. In Table 3, we share a comparison of the two methodologies

The Gartner analysis lacks a peer group comparison. As shown in this report, each industry's market drivers and inherent potential differ.

As shown in Table 4, the Gartner methodology biases large branded companies. The analysis shows that 67% of the Gartner Top 25 companies underperform their peer group on growth, 44% on operating margin, and 41% on inventory turns. The blue highlights underperformance, while the yellow highlights mark the companies meeting the criteria for both analyses. In the 2023 analysis, Apple and L'Oreal are the only companies that meet the requirements for these two very different techniques to assess supply chain excellence. ❊

Table 3. Comparison of Methodologies

Comparison of Methodologies		
Comparison	**Gartner Top 25**	**Supply Chains to Admire ™**
Focus	Public Manufacturing and Retail Companies from Fortune Global 500 and Forbes 2000 lists. 12$B minimum annual revenue. (roughly 300 companies)	All public companies analyzed by industry peer groups. 512 companies by 28 peer groups. No revenue minimum. There is no limit on the number of winners by peer group. Likewise, there may be no winner by industry.
Analysis	2020-2022	2013-2022
Calculation	**50% Opinion:** (Equally split between analyst and peer voting) **50% Quantitative Analysis:** • **10% of score is Revenue Growth:** (Change in revenue 2022-2021)*50%+(Change in Revenue 2021-2020)*50% • **5% of score is Inventory Turns:** 2022 cost of goods sold / 2022 quarterly average inventory • **15% of the Score is a Weighted Return on Physical Assets (ROPA).** Three-year weighted average. (50% 2022 ROPA, 30% 2021 ROPA and 20% 2020 ROPA). • 20% is Environmental, Social, and Governmental responsibility (3rd party indexes) - 20%	**Improvement:** Top 2/3 ranking on the Supply Chain Index. 🔻 **Performance**: At or above the industry mean for: 🔻 • Year-over-year revenue growth. • Operating margin. • Inventory turns. • Return on Invested Capital (ROIC). **Value:** At or above the mean for Price-to-Tangible Book or Market Capitalization. Index Calculations: https://www.slideshare.net/loracecere/sci-summit-2014-math-behind-sc-index?qid=27326733-0325-4ee7-aacd-e2827bd216de&v=&b=&from_search=11
History	19th Year	10th Year

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

RANK		COMPANY				INDUSTRY			
		Growth	Inventory Turns	Operating Margin	ROIC	Growth	Inventory Turns	Operating Margin	ROIC
1	Schneider Electric	2.0%	5.13	14.0%	7.0%	2.0%	4.7	13.0%	9.0%
2	Cisco	1.0%	12	26.0%	14.0%	5.0%	11.82	12.0%	11.0%
3	Colgate Palmolive	0.6%	4.75	23.3%	28.8%	1.4%	4.78	16.1%	13.4%
4	Johnson & Johnson	4.0%	2.85	26.0%	13.0%	6.0%	2.1	22.0%	16.0%
5	PepsiCo	3.0%	9.21	15.0%	15.0%	5.0%	5.34	17.0%	10.0%
6	Pfizer	9.0%	1.84	26.0%	14.0%	6.0%	2.1	22.0%	16.0%
7	Microsoft	11.0%	15.84	34.0%	22.0%	3.0%	7.09	6.0%	8.0%
8	Lenovo	10.0%	11.53	2.3%	8.0%	3.0%	7.09	6.0%	8.0%
9	Walmart	3.0%	8.37	5.0%	11.0%	5.0%	5.19	6.0%	14.0%
10	L'Oreal	4.0%	2.79	18.0%	15.0%	3.0%	2.49	11.0%	10.0%
11	Coca-Cola	-1.0%	5.02	26.0%	11.0%	5.0%	5.34	17.0%	10.0%
12	Diageo	2.0%	0.94	28.0%	13.0%	5.0%	5.34	17.0%	10.0%
13	Tesla	86.0%	4.54	-2.0%	-3.0%	8.0%	6.94	6.0%	6.0%
14	Intel	2.0%	3.86	26.0%	15.0%	14.0%	4.39	16.0%	11.0%
15	Siemens	5.0%	3.86	9.0%	12.0%	2.0%	4.88	14.0%	10.0%
16	Nestle	0.0%	6.23	14.0%	12.0%	4.5%	6.19	9.7%	7.5%
17	AsraZeneca	6.0%	1.97	9.0%	6.0%	6.0%	1.84	22.0%	13.0%
18	Dell	7.0%	13.78	0.0%	2.0%	5.0%	11.82	12.0%	11.0%
19	McDonalds	-1.0%	187.7	36.0%	20.0%	7.0%	83.03	14.0%	19.0%
20	Hewlett Packard	-6.0%	6.2	7.0%	4.0%	3.0%	8	3.0%	8.0%
21	Anheuser-Busch	4.0%	5.1	29.0%	10.0%	5.0%	5.34	17.0%	10.0%
22	Alibaba	46.0%	5.18	26.0%	18.0%	17.0%	4.11	14.0%	12.0%
23	GlaxoSmithKline	1.0%	1.81	20.0%	16.0%	6.0%	1.84	22.0%	13.0%
24	Dow	-4.0%	4.02	10.0%	8.0%	3.0%	4.92	11.0%	9.0%
Master	Amazon	24.0%	11.24	30.0%	9.0%	17.0%	4.11	14.0%	12.0%
Master	Apple	10.0%	46.4	28.0%	32.0%	5.0%	7.09	10.0%	9.0%
Master	Procter & Gamble	-1.0%	6.59	20.0%	12.8%	140.0%	4.78	16.1%	13.4%
Master	Unilever	-3.0%	5.43	17.0%	17.2%	140.0%	4.78	16.1%	13.4%

Trends and Insights

Our prior interviews with companies making the Supply Chains to Admire list found commonalities and similar patterns. 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.

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, focusing 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 launches and Corporate Social Responsibility programs all have great aspirations but operate in silos.

The gap in performance between process-based and discrete industries has 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. Companies cannot drive progress based on traditional process paradigms without redesigning the supply chain.

In many organizations, inventory is a sticky wicket—a political hot potato. At the end of 2021, inventory levels were significantly higher across industries than pre-recession levels in 2007. Today, many companies have burgeoning inventories but lack the right products to ship orders reliably. They are drowning in inventory, decreasing cash-to-cash performance, but have the wrong products to ship orders. 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 with over $ 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 it 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**					**Diffeence (2020 - 2021 vs 2004 - 2006)**
	2004 - 2006	**2007 - 2008**	**2009 - 2013**	**2014 - 2019**	**2020 - 2031**	
Medical Device	110	113	131	143	163	53
Beverage	115	229	238	191	164	49
Pharmaceuticals	155	144	170	195	197	42
Beauty	89	108	116	125	124	35
Automotive Parts	49	55	64	69	81	32
Household Products	50	51	57	74	82	32
Aerospace & Defense	94	89	97	103	123	29
Chemical	62	58	64	80	88	26
Apparel Retail	62	65	66	69	84	22
Automotive	35	39	41	45	49	14
Food	50	51	56	58	59	9
Semiconductor	61	68	80	91	68	7
Broadline Retail	65	62	63	66	58	-7

What Drives Value?

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

The focus of the traditional supply chain organization is cost 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:

$$\text{Price to Book Value} = \frac{\text{Market Share Price}}{\text{Book Value} \div \text{Share Outstanding}}$$

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. ❄

Figure 4. Driving Market Value

What Drives Market Value?

How do supply chain leaders transition from a cost-based agenda to drive value?

Center of Excellence Effectiveness *(r = 0.4)*

S&OP Effectiveness *(r = 0.3)*

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

Pain with Supplier Reliability *(r = -0.3)*

4 FACTORS

CORRELATE WITH PRICE TO TANGIBLE BOOK VALUE

Recommendations

When benchmarking a supply chain, companies must 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. In contrast, companies with a lower level of performance will drive faster progress rates, but improvement processes do not always drive value. Why? The average global multinational has more than a thousand improvement initiatives . 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.** Organizations should benchmark against companies within their industry sector to maximize potential and set goals. 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. Higher-performance companies 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 struggle with significant horizontal organizational alignment gaps between operations and commercial teams. To break the cycle, use this report to highlight 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 few and 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. ❈

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[1] https://www.slideshare.net/loracecere/driving-supply-chain-excellence18june2015final

Conclusion

Supply chain excellence does not just "*happen*." Progress requires moving past "end-to-end supply chain excellence" buzzwords 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 6.5% 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. ❄

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 measures improvement. Companies are stack ranked on orbit charts based on performance. The performance criteria are 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 this criteria.

Table 7A. Retail Industry Improvement Cut-off Information

RETAIL	Number of Companies	Improvement Score Cut-Off	Number of Winners	Winners by Name
Apparel Retail	19	13	3	Ross Stores, TJX, and Urban Outfitters
Broadline Retail	16	11	0	
Drug Retail	7	5	0	
Food Retail	11	7	1	Koninklijke Ahold Delhaize NV
Home Improvement Retail	6	4	0	
Resturants	19	13	0	
	78		**4**	**5.1%**

Table 7B. Discrete Industry Improvement Cut-off Information

DISCRETE	Number of Companies	Improvement Score Cut-Off	Number of Winners	Winners by Name
A&D	25	17	3	Northrop Grumman, Huntington Ingalls Industries, Lockheed Martin,
Apparel Manufacturers	26	17	2	Deckers Outdoors, Nike
Automotive Aftermarket	30	22	1	BorgWarner
Automotive	12	8	1	Toyota
B2B Technology	26	17	1	Apple
Contract Packaging	9	6	0	
Consumer Durable	18	12	2	Assa Abloy, Toro
Diversified Industries	28	19	2	Hubbell, Rockwell Automation
Medical Device	26	17	3	Intuitive Surgical, ResMed, West Pharmaceutical
Furniture	14	9	2	Leggett & Platt, Tempur Sealy
Semiconductor	28	19	2	NVIDIA, TSMC
Telecommunications	17	11	0	
Tires	4	3	0	
Trucks and Heavy Equipment	18	12	3	Cummins, Paccar, and United Tractors
	281		**22**	**7.8%**

Table 7C. Process Industry Improvement Cut-off Information

PROCESS	Number of Companies	Improvement Score Cut-Off	Number of Winners	Winners by Name
Beverages	20	13	1	Monster Beverages
Chemical	37	25	3	Celanese, Lyondell Bassel, and CF Industries
Consumer Non-Durable	12	8	0	
Containers and Packaging	19	13	2	CCL, Packaging Corporation of America
Food	31	21	0	
Pharmaceuticals	31	21	1	Gilead Sciences
Personal Products	12	8	1	L'Oreal
	162		**8**	**4.9%**

Retail Overview

In this analysis, we evaluate 78 companies in seven retail sectors. In the report, four companies—Koninklijke Ahold Delhaize NV (Ahold), Ross Stores, TJX, and Urban Outfitters—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	Fundamental Score	Price to Book Value
RETAIL		**Average for 2013-2022**						
Apparel	19	$9,771	4.7%	4.52	8.8%	14.1%	7.90	4.63
Broadline	16	$70,482	5.2%	5.19	6.4%	14.4%	8.31	4.04
Drug	7	$71,437	6.3%	7.20	6.7%	14.3%	8.48	4.18
Home Improvement	6	$41,969	7.5%	4.99	7.0%	12.4%	7.82	4.90
Grocery	16	$47,091	2.5%	12.77	3.5%	9.7%	7.07	2.78
Restaurants	19	$6,348	7.2%	81.94	14.3%	18.9%	6.42	6.23

Apparel Retail

The Apparel Retail sector has three Supply Chain to Admire Award winners for 2023: Ross Stores for the fifth year, TJX for the sixth year, and Urban Outfitters for the second year. Business process innovation defined the winners as the industry rebounded from the pandemic in 2022.

When we compare 2022 to 2013 operating margins, we find operating margins down 1% and a decline in inventory turns of 13%.

Table 9. Retail Sector Averages for Apparel Retail for the Period of 2013-2022

INDUSTRY: Retail Apparel									
COMPANY INFORMATION		IMPROVE-MENT	PERFORMANCE				VALUE		
NAME	2022 REVENUE	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	FUNDAMENTAL AVERAGE SCORE	PRICE TO BOOK	MARKET CAP
2013 - 2022									
Abercrombie & Fitch Co	$3,713	9	-0.5%	3.21	4.0%	3.8%	7	1.38	1,531
American Eagle Outfitters	$5,011	5	5.5%	6.52	8.0%	13.3%	8	2.50	3,067
ASOS PLC	$5,122	19	38.4%	2.83	3.9%	16.0%	NA	11.72	4,559
Carter`s, Inc	$3,200	13	3.4%	3.33	11.7%	16.0%	9	5.17	4,275
Chico`s FAS	$1,810	14	-0.3%	5.74	2.4%	-0.6%	7	2.01	1,257
Designer Brands Inc	$3,197	12	6.4%	3.86	4.6%	5.2%	7	2.24	1,809
Dick's Sporting Goods Inc	$12,293	1	9.2%	3.35	7.8%	20.6%	9	2.97	5,866
Foot Locker	$8,958	6	5.0%	4.21	10.0%	18.6%	10	2.29	6,027
Gap Inc	$16,670	14	1.7%	4.82	7.5%	16.3%	9	3.54	10,210
Guess?	$2,592	9	0.9%	3.96	6.0%	6.7%	8	2.10	1,568
J.Jill Inc	$585	2	4.5%	1.62	3.2%	-8.9%	3	0.40	110
L Brands Inc	$7,882	2	0.3%	5.09	16.6%	17.1%	6	0.00	12,803
Lululemon Athletica inc	$6,257	17	20.5%	3.63	21.3%	28.7%	8	12.05	22,643
Marks and Spencer Group PLC	$14,875	4	-2.9%	7.81	5.7%	4.0%	NA	1.86	7,442
Nordstrom	$14,789	16	4.4%	4.84	5.6%	9.1%	8	8.58	7,767
Ross Stores Inc	$18,916	7	9.4%	6.07	12.3%	35.9%	10	10.36	31,081
Tapestry Fashion Co	$6,685	18	3.0%	2.71	15.6%	16.1%	9	3.75	10,495
TJX Companies Inc	$48,550	8	5.4%	5.76	11.2%	34.3%	10	11.10	54,774
Urban Outfitters	$4,549	11	8.7%	6.52	9.1%	15.9%	8	3.86	12,351
MEAN WITH OUTLIERS	$9,771		6.5%	4.52	8.8%	14.1%	7.9	4.63	10,507
MEAN WITHOUT OUTLIERS			4.7%	4.52	8.8%	14.1%	7.9	4.63	8,048

Broadline Retail

While Dollar General placed for five years and Dollar General for four years in the Winners Circle, there is no Supply Chains to Admire winner for 2023 in the Broadline Retail Sector.

Of note, Walmart and Target, winners in 2016 and 2015, no longer lead this peer group. Each fails due to the focus on singular metrics.

When comparing 2022 to 2013, we see that margins declined by 1% while inventory turns decreased by 10%.

Table 10. Broadline Retail Sector Averages for 2013-2022

INDUSTRY: Retail Broadline									
COMPANY INFORMATION		IMPROVE-MENT	PERFORMANCE				VALUE		
NAME	2022 REVENUE (MS)	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	FUNDAMENTAL AVERAGE SCORE	PRICE TO BOOK	MARKET CAP
2013 - 2022									
Bed Bath & Beyond Inc	$7,867.8	15	-1.4%	2.96	7%	6.7%	7	2.09	5,597
Best Buy Co	$51,761.0	5	1.6%	6.05	4%	22.1%	8	4.69	17,631
Big Lots	$6,150.6	61	1.9%	3.50	5%	21.0%	9	2.31	1,621
Burlinton Stores Inc	$9,322.3	1	10.6%	3.66	5%	15.1%	6	20.36	9,960
Costco Wholesale	$226,954.0	7	8.7%	11.53	3%	16.1%	10	7.88	117,862
Dillard's Inc	$6,624.3	2	1.9%	3.05	6%	11.2%	9	1.82	3,074
Dollar General Corp	$34,220.4	13	8.8%	4.48	9%	16.8%	9	5.55	33,675
Dollar Tree Stores	$26,321.2	13	16.6%	4.73	9%	13.8%	8	5.17	22,007
Kohl's	$19,433.0	6	0.8%	3.39	7%	8.8%	9	1.62	8,636
Macy's	$25,292.0	10	0.7%	3.06	6%	5.2%	8	2.36	10,333
Office Depot Inc	$8,491.0	4	-2.0%	6.90	3%	0.6%	5	1.33	2,335
Pricesmart Inc	$4,066.1	9	7.2%	8.41	5%	11.4%	10	3.60	2,485
Target	$106,005.0	7	4.5%	5.99	7%	11.6%	9	4.53	57,647
Tractor Supply Co	$14,204.7	12	11.9%	3.43	10%	29.4%	9	8.72	14,179
WalMart	$572,754.0	10	2.5%	8.37	5%	10.5%	9	3.97	303,203
Williams-Sonoma Inc	$8,245.9	3	9.3%	3.47	11%	29.6%	10	4.88	7,066
MEAN WITH OUTLIERS	$70,482.1		5.2%	5.19	6%	14.4%	8.3	5.06	38,582
MEAN WITHOUT OUTLIERS			5.2%	5.19	6%	14.4%	8.3	4.04	14,017

Drug Retail

In 2023, 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. When we compare 2013 to 2022, we find that the operating margins are flat while inventory turns declined by 20%.

Table 11. Drug Retail Sector Averages for the Period of 2013-2022

INDUSTRY: Retail Broadline									
COMPANY INFORMATION		IMPROVE-MENT	PERFORMANCE				VALUE		
NAME	2022 REVENUE (MS)	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	FUNDAMENTAL AVERAGE SCORE	PRICE TO BOOK	MARKET CAP
2013 - 2022									
CVS Pharmacy	322,467	1	10.4%	10.96	5.5%	6.5%	9	2.03	98,937
PetMed Express	273	3	1.6%	6.99	13.0%	25.0%	8	4.60	489
Raia Drogasil	5,637	1	5.7%	3.76	5.1%	11.2%	8	5.55	5,071
Rite-Aid Pharmacy	24,568	5	-0.2%	8.18	1.4%	4.2%	NA	3.69	3,474
Sundrug Company Ltd	5,779	7	1.9%	6.65	6.1%	14.9%	9	1.99	2,812
Ulta Beauty Inc	8,631	4	18.0%	3.58	12.3%	29.5%	8	8.97	14,707
Walgreens Boots Alliance	132,703	5	6.9%	10.29	3.6%	9.0%	9	2.48	60,813
MEAN WITH OUTLIERS	**71,437**		**6.3%**	**7.20**	**6.7%**	**14.3%**	**8.6**	**4.18**	**26,615**
MEAN WITHOUT OUTLIERS			**6.3%**	**7.20**	**6.7%**	**14.3%**	**8.5**	**4.18**	**26,615**
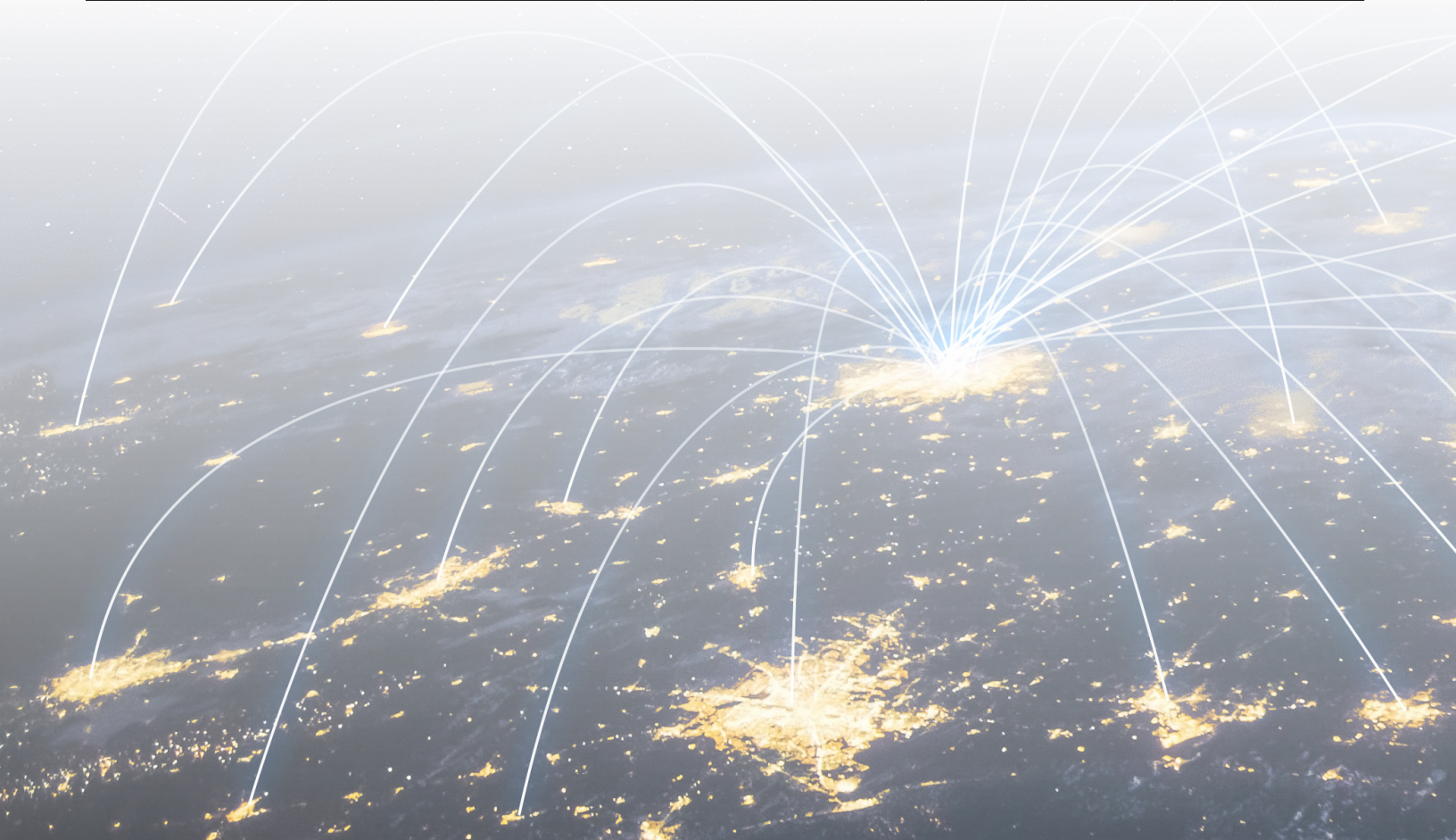
Grocery Retail

For 2023, Ahold placed in the Winner's Circle for the fourth year. In Grocery Retail, companies subconsciously traded margin for cash. When we compare 2013 to 2022, margins are flat, and inventory turns improved by 1%.

Table 12. Grocery Retail Sector Averages for the Period of 2013-2022

INDUSTRY: Retail Broadline									
COMPANY INFORMATION		IMPROVE-MENT	PERFORMANCE				VALUE		
NAME	2022 REVENUE (MS)	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	FUNDAMENTAL AVERAGE SCORE	PRICE TO BOOK	MARKET CAP
2013 - 2022									
Carrefour	$87,624	7	-1.1%	9.11	2.7%	2.7%	NA	1.57	17,311
Dairy Farm International	$9,174	10	-0.1%	8.11	4.0%	15.3%	NA	6.63	8,659
Empire Co Ltd	$24,039	4	4.2%	14.05	2.4%	3.6%	7	1.60	5,506
Koninklijke Ahold Delhaize NV	$91,733	5	8.7%	14.86	3.8%	12.1%	9	2.05	25,668
Kroger Co	$137,888	9	5.0%	11.75	6.1%	13.8%	9	2.70	11,485
Metro AG	$18,889	8	-0.9%	11.84	4.2%	18.1%	NA	3.64	643
Pick N Pay	$6,590	2	1.4%	18.34	2.4%	3.6%	NA	0.81	7,580
Sainsbury	$41,031	11	1.6%	6.66	5.3%	15.9%	1	4.42	6,935
Shoprite Supermarkets	$12,088	2	-1.6%	21.73	2.3%	3.2%	NA	1.71	26,815
Tesco PLC	$84,248	6	4.4%	14.35	2.5%	10.3%	8	3.99	28,382
Weis Markets Inc	$4,696	1	5.8%	9.62	3.1%	8.4%	9	1.44	1,445
MEAN WITH OUTLIERS	$47,091		2.5%	12.77	3.5%	9.7%	7.1	2.78	12,766
MEAN WITHOUT OUTLIERS			2.5%	12.77	3.5%	9.7%	7.1	2.78	12,766

Home Improvement Retail

For 2020, there are no Home Improvement Retail Supply Chains to Admire Winners. The closest is Home Depot, which fails to deliver on inventory management.

When 2013 is compared to 2022, margins fell by 1% while inventory turns decreased by 31%.

Table 13. Home Improvement Retail Sector Averages for the Period of 2013-2022

INDUSTRY: Retail Home Improvement									
COMPANY INFORMATION		IMPROVE-MENT	PERFORMANCE				VALUE		
NAME	2022 REVENUE (MS)	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	FUNDAMENTAL AVERAGE SCORE	PRICE TO BOOK	MARKET CAP
2013 - 2022									
American Woodmark Corp	$1,857	4	12.9%	14.02	6.5%	9.1%	7	3.00	1,154
Haverty	$1,047	4	5.1%	3.62	6.0%	15.1%	9	1.76	494
Lowe's Companies Inc	$96,250	2	6.9%	3.90	8.8%	17.0%	9	12.14	90,552
Lumber Liquidators Holdings	$1,111	6	3.4%	2.41	0.6%	0.1%	7	3.28	853
The Home Depot Inc	$151,157	3	8.0%	4.92	13.5%	30.3%	8	116.00	228,017
Tile Shop Holdings Inc	$395	1	8.4%	1.08	6.8%	2.6%	7	4.34	490
MEAN WITH OUTLIERS	**$41,969**		**7.5%**	**4.99**	**7.0%**	**12.4%**	**7.6**	**23.42**	**53,593**
MEAN WITHOUT OUTLIERS			**7.5%**	**4.99**	**7.0%**	**12.4%**	**7.8**	**4.90**	**53,593**

Restaurants

In this period, there are no Supply Chains to Admire Winners for the Restaurant Industry.

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

Table 14. Restaurant Sector Averages for the Period of 2013-2022

INDUSTRY: Restaurants									
COMPANY INFORMATION		IMPROVE-MENT	PERFORMANCE				VALUE		
NAME	2022 REVENUE (MS)	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	FUNDAMENTAL AVERAGE SCORE	PRICE TO BOOK	MARKET CAP
2013 - 2022									
BJ's Restaurants Inc	1,284	16	7.6%	84.32	2.6%	5.4%	7	2.85	902
Brinker International Inc	3,804	8	3.2%	48.24	8.0%	17.7%	5	77.56	2,266
Cheesecake Factory Inc	3,303	14	7.3%	34.06	5.1%	12.5%	7	4.49	2,139
Chipotle's Mexican Grill Inc	8,635	12	12.8%	191.41	10.4%	20.9%	8	12.09	23,311
Cracker Barrel Old Country Store Inc	3,268	16	2.8%	12.26	7.6%	16.8%	9	5.86	3,264
Darden Restaurants Inc	9,630	3	6.7%	28.50	8.3%	14.7%	8	5.47	11,913
Denny's Corp	456	13	1.9%	128.94	11.7%	34.6%	4	62.78	863
Domino's Pizza Enterprises Ltd	4,537	16	10.6%	41.08	17.7%	65.2%	6	0.00	10,062
Jack in the Box Inc	1,468	5	0.8%	223.22	18.1%	16.7%	4	18.65	2,352
McDonald's Corp	23,183	8	-1.4%	187.70	36.4%	19.8%	7	2.81	136,806
Nathan's Famous Inc	115	1	7.4%	99.50	24.6%	17.4%	6	1.20	271
Papa John's International	2,102	14	4.8%	48.18	6.4%	30.4%	6	12.68	2,693
Post Holdings inc	5,851	6	26.3%	6.71	9.4%	0.7%	5	1.20	3,483
Red Robin Gourmet Burgers Inc	1,267	19	4.0%	30.06	0.7%	-8.9%	6	2.19	585
Restaurant Brands International	6,505	2	25.3%	25.58	38.6%	3.4%	5	6.53	13,166
Starbucks Corp	32,250	8	9.6%	11.28	15.1%	32.4%	8	13.37	93,240
Texas Roadhouse Inc	4,015	11	13.0%	98.40	7.5%	15.4%	8	4.69	3,988
Wendy's Co	2,096	3	-0.6%	233.11	15.7%	5.7%	7	6.84	4,057
Yum Brands Inc	6,842	7	-4.8%	24.26	27.2%	39.1%	6	5.00	28,675
MEAN WITH OUTLIERS	**6,348**		**7.2%**	**81.94**	**14.3%**	**18.9%**	**6.4**	**12.96**	**18,107**
MEAN WITHOUT OUTLIERS			**7.2%**	**81.94**	**14.3%**	**18.9%**	**6.4**	**6.23**	**6,705**

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 2013-2022

	Number of Companies	Average Revenue (M$)	Year-over-Year Growth	Inventory Turns	Operating Margin	Return on Invested Capital	Fundamental Score	Price to Book Value
RETAIL	Average for 2013-2022							
Aerospace & Defense	25	$17,914	2.7%	5.05	8.4%	9.5%	7.34	3.13
Apparel	26	$10,464	6.7%	2.66	10.5%	12.6%	8.00	3.83
Automotive Aftermarket	33	$12,369	4.4%	7.09	10.1%	8.4%	8.10	2.44
Automotive	12	$97,798	1.4%	6.90	6.7%	5.8%	7.41	7.00
B2B Technologies	26	$41,822	3.2%	5.77	0.0%	5.9%	6.49	2.08
Consumer Durables	18	$14,791	2.0%	4.39	9.4%	7.6%	7.81	2.41
Contract Manufacturing	9	$8,953	3.8%	6.30	3.8%	5.6%	6.40	1.49
Diversified Industries	28	$16,759	13.2%	4.50	13%	9.1%	8.26	8.26
Furniture	14	$2,119	6.86%	5.63	5.2%	14%	7.55	3.45
Medical Device	26	$7,909	18.14%	2.58	18.1%	10.9%	8.16	4.17
Semiconductor	28	$16,220	16.3%	11.48	16.3%	11.5%	7.74	4.36
Telecommunications	17	$19,190	12.2%	8.22	12.2%	11.1%	7.10	2.05
Tires	4	$21,250	8.2%	7.06	8.2%	5.7%	5.8	1.57
Trucks and Heavy Equipment	18	$23,442	8.1%	3.50	8.1%	6.9%	7.46	1.91

Aerospace and Defense Industry

For 2023, Lockheed Martin places in the winner circle for the fifth consecutive year and is joined by Northrop Grumman, a winner for the second successive year. A newcomer is Huntington Ingalls Industries. This Company, a spin-off of Northrop, builds ships.

With many ups and downs, the margin declined by 30% while inventory turns improved by 28%. The increase in defense spending drove growth.

Table 16. Industry Averages for the Aerospace Sector for the Period of 2013-2022

INDUSTRY: Aerospace & Defense									
COMPANY INFORMATION		IMPROVE-MENT	PERFORMANCE				VALUE		
NAME	2022 REVENUE (MS)	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	FUNDAMENTAL AVERAGE SCORE	PRICE TO BOOK	MARKET CAP
2013 - 2022									
Embraer	$4,540	9	3.7%	1.82	2.4%	-0.7%	6	1.15	4,019
General Dynamics	$39,407	5	2.6%	4.61	12.0%	15.2%	10	3.75	50,088
Heico	$2,208	8	9.8%	2.79	20.3%	11.3%	10	5.89	9,053
Hexcel Corp	$1,578	9	1.3%	4.77	13.7%	10.1%	8	3.55	4,735
Huntington Ingalls Industries	$10,676	1	4.8%	35.47	9.1%	16.0%	9	4.33	7,676
Kaman Aircraft	$688	24	-4.9%	2.99	6.0%	5.3%	8	2.03	1,303
L3 Technologies	$17,062	2	15.3%	7.25	13.9%	6.5%	8	3.44	23,557
Lear Corp	$20,892	12	4.0%	15.10	5.5%	12.5%	7	2.39	8,838
Lockheed Martin	$65,984	6	3.7%	14.19	12.4%	30.8%	8	24.81	84,593
Magellan Aerospace Corp	$765	20	1.6%	3.92	7.9%	6.8%	7	1.25	784
National Presto Industries	$322	18	-3.4%	2.49	14.5%	10.8%	6	1.74	608
Northrop Grumman	$36,602	11	4.0%	32.10	12.0%	16.0%	9	5.51	47,770
Raytheon	$67,074	20	3.5%	4.58	11.0%	7.4%	9	1.89	82,616
Spirit AeroSystems Holdings	$5,030	2	2.6%	3.89	2.1%	3.4%	6	4.53	6,200
TAT Technologies	$85	15	1.5%	1.88	1.0%	-0.2%	5	0.72	61
TransDigm Group	$5,429	16	12.9%	2.03	39.4%	6.2%	6	0.00	20,975
Woodward	$2,383	13	3.0%	3.53	11.5%	8.6%	10	3.19	5,059
MEAN WITH OUTLIERS	$17,914		2.7%	7.14	9.6%	9.5%	7.3	7.22	23,837
MEAN WITHOUT OUTLIERS			2.7%	4.82	8.4%	9.5%	7.3	3.13	21,388

Apparel

Nike placed in the winner's circle for the sixth consecutive year. Deckers Outdoors joined Nike for the first time. Steve Madden delivers on improvement and performance but fails to deliver on value.

With the many ups and downs through the pandemic, the margin declined by 8%, while inventory turns declined by 14%. Over the decade, the industry chased the lower labor cost and is currently struggling to deliver orders reliably in the face of demand volatility and shifting sourcing strategies.

Table 17. Apparel Sector Evaluation for the Period 2013-2022

INDUSTRY: Apparel Manufacturers									
COMPANY INFORMATION		IMPROVE-MENT	PERFORMANCE				VALUE		
NAME	2022 REVENUE (MS)	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	FUNDAMENTAL AVERAGE SCORE	PRICE TO BOOK	MARKET CAP
2013 - 2022									
Adidas	$23,740	13	2.8%	2.66	8%	13.2%	10	5.26	39,126
Bosideng International	$2,524	10	8.2%	2.29	12%	7.6%	N/A	1.39	1,972
Capri Holdings Ltd	$5,654	7	18.9%	2.46	21%	26.7%	8	4.46	9,014
Colombia Sportswear	$3,464	5	8.2%	2.55	11%	12.5%	9	2.91	4,839
Crocs	$3,555	3	14.4%	3.73	9%	26.0%	7	60.30	2,758
Deckers Outdoors	$3,150	1	8.7%	3.10	12%	16.9%	8	3.95	4,901
Fossil Group	$1,682	26	-4.3%	2.53	6%	0.8%	6	2.06	1,798
Gildan Activewear	$3,240	17	6.8%	2.24	14%	13.5%	8	3.38	6,416
Hanes Brands	$6,234	23	3.5%	2.28	10%	7.2%	8	6.32	6,849
Hennes & Mauritz AB	$22,544	21	2.9%	2.62	10%	23.3%	8	6.46	42,490
Hugo Boss	$3,851	24	4.2%	1.64	10%	18.8%	9	5.12	5,235
Interface Inc	$1,298	12	3.8%	3.47	10%	5.9%	8	3.05	1,047
Moet Louis Vuitton	$83,507	15	9.8%	1.25	21%	13.7%	N/A	4.81	197,597
Moncler	$2,745	19	11.0%	1.62	29%	23.0%	2	7.72	9,321
Nike	$46,710	15	7.3%	3.64	13%	23.8%	10	11.75	138,822
Puma	$8,927	4	8.5%	2.64	5%	7.6%	8	3.54	7,737
PVH	$9,155	11	5.8%	2.83	7%	4.9%	9	1.60	7,874
Ralph Lauren	$6,219	5	0.3%	2.97	11%	9.6%	9	2.90	9,699
Skechers	$7,445	18	17.7%	2.59	8%	11.9%	9	2.42	4,779
Steve Madden	$2,122	8	7.5%	7.82	11%	16.6%	8	3.47	2,662
Under Armour	$5,683	13	15.8%	2.88	7%	5.8%	8	2.65	5,214
Unifirst	$2,001	22	4.8%	3.98	12%	9.1%	9	2.04	3,107
Vera Bradley	$540	25	2.1%	1.91	9%	11.7%	7	1.70	464
VF Corp	$11,842	2	1.9%	3.37	11%	12.1%	9	6.43	27,806
Wacoal Holdings Corp	$1,540	9	-3.1%	1.33	5%	3.3%	8	0.77	1,509
Wolverine World Wide	$2,685	20	7.3%	3.93	8%	2.7%	8	3.04	2,481
MEAN WITH OUTLIERS	$10,464		6.7%	2.86	11%	12.6%	8.0	6.14	20,981
MEAN WITHOUT OUTLIERS			6.7%	2.66	10%	12.6%	8.0	3.83	4,746

Automotive

In this period, Toyota succeeded in outperforming the automotive peer group. Subaru, the prior year's winner, beats the industry for performance and value but fails to drive sufficient progress on improvement to stay in the winner's circle. Audi and BWI won in prior years. North American-centric manufacturers continue to underperform the industry.

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, allowing the industry to rebound in the growing economy. Over the decade, margins increased by 3%, and inventory performance declined by 18%.

Table 18. Automotive Sector Evaluation for the Period 2013-2022

INDUSTRY: Automotive									
COMPANY INFORMATION		IMPROVE-MENT	PERFORMANCE				VALUE		
NAME	2022 REVENUE (MS)	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	FUNDAMENTAL AVERAGE SCORE	PRICE TO BOOK	MARKET CAP
2013 - 2022									
Bayerische Motoren Werke AG	$150,396	12	4.5%	6.06	9.5%	7.5%	9	1.08	63,626
BYD - Build Your Dream	$63,132	4	26.2%	4.50	6.0%	3.7%	8	3.69	34,643
Ferrari NV	$5,373	1	7.1%	2.89	20.8%	15.9%	7	17.01	22,404
Ford Motor Co	$158,057	6	2.1%	12.69	7.5%	3.1%	6	1.59	51,460
General Motors Co	$156,735	2	0.8%	10.58	4.7%	5.5%	6	1.29	57,161
Honda Motor Co Ltd	$129,630	11	2.8%	7.48	5.2%	4.2%	9	0.79	53,069
Isuzu Motors Ltd	$22,396	9	2.9%	6.44	7.9%	9.1%	9	1.29	9,715
Mazda Motor Corp	$27,795	9	0.9%	6.42	3.8%	5.2%	6	1.06	8,524
Mitsubishi Motors Corp	$18,162	14	-0.8%	7.96	2.9%	1.6%	6	1.28	6,947
Nissan Motor Co Ltd	$75,043	16	-4.2%	7.13	3.6%	2.3%	7	0.73	30,078
Renault SA	$48,924	8	-0.3%	8.01	4.3%	1.6%	NA	0.51	16,915
Stellantis	$189,397	2	18.5%	7.83	6.1%	8.1%	6	0.72	23,913
Subaru	$24,447	16	2.9%	6.81	9.5%	14.5%	9	1.88	21,502
Suzuki Motor Corp	$31,786	18	0.3%	7.54	6.8%	6.7%	10	1.35	17,294
Tesla Inc	$81,462	15	86.1%	4.54	-1.5%	-3.0%	5	21.10	245,602
Toyota Motor Corp	$279,517	4	1.9%	9.80	8.4%	5.5%	9	1.16	196,491
Volkswagen AG	$294,477	13	2.1%	4.74	5.1%	4.0%	8	0.76	98,636
Yamaha Motors	$3,636	7	-2.0%	2.77	9.1%	9.3%	8	0.99	3,160
MEAN WITH OUTLIERS	$97,798		8.4%	6.90	6.7%	5.8%	7.4	3.24	53,397
MEAN WITHOUT OUTLIERS			1.4%	6.90	6.7%	5.8%	7.0	1.26	32,440

Automotive Parts

There has been no winner in the Automotive Parts Sector for the past three years. Tethered to large brand owners with a diligent focus on cost-cutting and inadequate supplier development programs, only the tough survived in the Automotive Parts industry.

BorgWarner wins this year. Over the ten years, there was a 20% decline in margin and a 30% decline in inventory turns.

Table 19. Automotive Parts Sector Evaluation for the Period 2013-2022

INDUSTRY: Auto Parts									
COMPANY INFORMATION		IMPROVE-MENT	PERFORMANCE				VALUE		
NAME	2022 REVENUE (MS)	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	FUNDAMENTAL AVERAGE SCORE	PRICE TO BOOK	MARKET CAP
2013 - 2022									
Advance Auto Parts	$11,155	17	-0.4%	1.27	7.6%	12.8%	10	3.96	10,739
Aisin Seiki Co Ltd	$34,895	10	0.0%	10.50	5.0%	4.8%	9	0.70	7,882
Allison Transmission Holdings Inc	$2,769	7	3.7%	6.36	27.6%	11.4%	7	6.04	5,080
American Axle & Manufacturing	$5,802	4	9.0%	13.11	7.5%	3.0%	5	7.10	1,343
Autoliv Inc	$8,842	11	1.0%	9.20	8.3%	8.6%	9	2.60	7,332
BorgWarner Inc	$15,801	1	8.9%	9.81	11.4%	10.0%	9	2.28	9,949
Commercial Vehicle Group	$982	2	2.7%	7.87	3.7%	1.1%	5	2.41	210
Continental AG	$41,560	27	0.5%	7.28	8.1%	8.3%	8	2.30	34,290
Cooper-Standard Holdings Inc	$2,525	30	-0.8%	16.74	2.8%	-1.1%	6	1.56	990
Dana Inc	$10,156	31	4.4%	6.96	5.8%	7.1%	6	2.42	2,877
Danaher Corp	$31,471	2	7.0%	4.28	18.9%	8.6%	10	3.12	101,884
Denso Corp	$49,130	17	2.3%	7.39	6.3%	5.9%	9	1.34	40,967
Dorman Products Inc	$1,734	26	12.0%	2.35	15.8%	16.3%	8	3.64	2,435
Douglas Dynamics	$616	14	17.5%	4.18	14.9%	6.2%	8	3.44	771
Gentex Corp	$1,919	14	6.0%	4.92	26.5%	18.3%	9	3.39	6,182
Gentherm Inc	$1,205	29	8.5%	5.99	10.1%	11.2%	9	3.52	1,635
Hella KGaA Hueck & Co	$7,212	21	1.7%	5.93	5.6%	8.6%	8	1.68	4,632
Johnson Controls	$25,299	8	-1.8%	8.21	7.9%	6.2%	7	2.05	33,536
JTEKT Corp	$12,724	28	-0.3%	6.59	3.9%	3.7%	8	1.05	4,558
Koito Manufacturing Co Ltd	$6,776	21	2.4%	10.05	9.6%	11.0%	10	0.68	3,214
LKQ Corp	$12,794	21	12.6%	2.76	9.6%	8.8%	9	2.75	11,013
Mabuchi Motor Co Ltd	$1,202	33	1.4%	2.69	12.8%	7.0%	9	1.00	2,086
Magan International	$37,840	17	2.5%	9.83	6.2%	13.0%	9	1.82	18,674
Motorcar Parts of America	$650	31	14.0%	2.64	9.8%	4.4%	7	1.83	410
Nexteer Automotive Group Ltd	$3,840	13	6.5%	9.47	7.4%	12.0%	NA	1.89	2,506
NGK Spark Plug Co Ltd	$4,380	6	2.1%	2.84	13.9%	8.1%	9	0.85	2,995
O'Reilly Automotive	$14,410	8	8.9%	1.47	19.3%	36.0%	7	46.63	29,743
PT Astra International Tbk	$20,300	20	1.8%	8.62	10.3%	8.7%	9	2.30	20,423
Stanley Electric Co Ltd	$3,408	24	1.2%	9.78	10.0%	7.2%	10	0.34	1,201
The Timken Co	$4,497	25	3.5%	3.25	11.7%	8.9%	9	2.20	3,996
Toyoda Gosei Co Ltd	$7,395	12	1.7%	10.29	4.9%	5.1%	9	0.07	222
Valeo SA	$21,131	16	3.8%	9.20	5.3%	6.4%	NA	2.41	9,793
Visteon Corp	$3,756	4	2.7%	12.29	4.7%	18.0%	5	5.28	3,426
MEAN WITH OUTLIERS	12,369	8		4.4%	7.09	0.10	9.3%	3.78	11,727
MEAN WITHOUT OUTLIERS				4.4%	7.09	0.10	8.4%	2.44	7,876

B2B Technology

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

Sourcing and contract manufacturing relationships tethered to new product launch programs drove supply chain success in this industry. Margins increased by 2%, and inventory turns decreased by 22%.

Table 20. B2B Technology Sector Evaluation for the Period of 2013-2022

INDUSTRY: B2B Technology									
COMPANY INFORMATION		IMPROVE-MENT	PERFORMANCE				VALUE		
NAME	2022 REVENUE (MS)	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	FUNDAMENTAL AVERAGE SCORE	PRICE TO BOOK	MARKET CAP
2013 - 2022									
Alps Electric Co Ltd	$7,152	21	0.9%	6.86	4.9%	4.7%	7	1.59	3,613
Ambarella	$332	18	15.5%	4.48	4.0%	7.6%	7	6.16	2,511
Apple Inc	$394,328	4	10.3%	46.40	27.8%	32.2%	9	16.03	1,243,190
Bang & Olufsen A/S	$452	21	0.0%	3.16	-7.4%	-6.9%	5	3.29	760
Eastman Kodak Co	$1,205	6	-7.2%	4.24	-1.2%	-12.4%	4	2.72	522
EnerSys Manufactures	$3,357	15	4.1%	4.66	10.1%	8.4%	9	2.47	3,124
GoPro Inc	$62,983	5	11.8%	4.60	-1.2%	1.9%	5	3.72	1,791
Hewlett Packard Enterprises Co	$28,496	2	-6.1%	6.20	7.3%	3.8%	4	0.72	15,612
JVC Kenwood Corp	$2,513	13	-4.4%	5.32	2.0%	1.1%	4	0.28	148
Lenovo Group	$71,618	7	9.6%	11.53	2.3%	11.3%	8	2.67	10,159
LG Display Co Ltd	$20,320	21	-1.7%	9.41	2.3%	1.0%	5	0.69	7,369
LG Electronics	$64,855	3	3.5%	7.56	3.9%	3.0%	7	0.00	0
Logitech International	$5,481	25	10.9%	5.61	9.5%	18.4%	6	4.92	6,968
LSI Industries	$455	8	6.1%	5.17	2.2%	1.0%	6	1.46	208
NCR	$7,844	16	3.4%	6.79	7.4%	3.2%	NA	4.54	4,375
Nintendo Co Ltd	$15,101	10	11.2%	5.53	13.9%	10.9%	7	2.72	37,333
Samsung	$234,835	11	3.5%	3.38	16.2%	13.6%	10	0.00	0
Seagate	$11,661	17	-2.2%	8.33	12.9%	21.2%	8	11.37	15,251
Seiko Epson Corp	$10,056	24	-0.9%	3.16	6.7%	8.9%	7	0.98	4,265
Sharp Corp	$22,230	19	-2.8%	8.19	0.9%	-6.2%	4	2.51	7,164
Sony Corp	$88,377	1	0.9%	8.44	6.4%	5.7%	6	1.79	68,531
Super Micro Computer Inc	$5,196	12	18.7%	3.50	4.1%	9.8%	9	1.78	1,602
Truly International Holdings Ltd	$2,094	8	-0.5%	1.50	0.2%	0.3%	NA	0.00	0
Universal Electronics Inc	$543	26	2.1%	3.59	4.1%	4.9%	7	2.30	657
Western Digital Corp	$18,793	14	5.6%	5.52	9.8%	5.1%	7	1.76	17,966
Xerox	$7,107	19	-9.2%	7.61	8.7%	2.1%	6	0.92	6,292
MEAN WITH OUTLIERS	**$41,822**		**3.2%**	**7.34**	**6.1%**	**5.9%**	**6**	**2.98**	**56,131**
MEAN WITHOUT OUTLIERS			3.2%	5.77	0.0%	5.9%	6	2.08	4,798

Consumer Durables

Assa Abloy and Toro Corporation are Winners in the 2023 Supply Chains to Admire analysis for the durable consumer industry. Each has won, throughout the comparison, for four years.

With an ever-changing product portfolio, effective supply chain management is essential for this industry. Over the last decade, this sector experienced flat growth while increasing margin by 1% and facing a 20% decline in inventory turns.

Table 21. Consumer Durable Technology Sector Evaluation for the Period of 2013-2022

INDUSTRY: Household Durables									
COMPANY INFORMATION		IMPROVE-MENT	PERFORMANCE				VALUE		
NAME	2022 REVENUE (MS)	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	FUNDAMENTAL AVERAGE SCORE	PRICE TO BOOK	MARKET CAP
2013 - 2022									
Armstrong World Industries	1,233	6	3	-3.6%	7.79	0.16	9.3%	7.77	3,240
Assa Abloy AB	12,043	10	7	5.9%	4.81	0.15	10.9%	1.29	23,650
Breville Group	1,029	0	11	10.1%	3.56	0.12	19.5%	0.49	206
Canon	30,916	8	9	-3.0%	3.41	0.08	6.2%	1.21	30,401
Compagnie de Saint-Gobain SA	53,992	0	2	0.1%	5.09	0.08	4.4%	1.06	22,974
Electrolux AB	13,448	7	16	-1.6%	6.39	0.04	10.1%	3.29	6,959
Hamilton Beach Brands Holding Co	641	5	1	-1.6%	2.07	0.04	7.6%	3.02	155
Husqvarna AB	5,388	8	12	2.0%	2.83	0.08	8.6%	2.64	5,098
iRobot Corp	1,183	8	18	11.5%	4.60	0.05	6.1%	3.14	1,590
Koninkijke Philips	18,800	7	17	-3.3%	3.33	0.06	6.3%	2.25	31,814
Panasonic Corp	65,817	7	15	-3.8%	6.55	0.04	3.2%	1.44	25,214
Ryobi Ltd	1,914	6	8	-0.5%	4.28	0.03	2.2%	0.14	155
SKF AB	9,664	9	4	0.5%	3.48	0.10	9.3%	2.64	9,286
Snap-on Inc	4,493	10	5	4.5%	2.94	0.24	14.7%	3.12	9,443
Stanley Black and Decker Inc	16,947	10	10	5.6%	3.81	0.10	7.9%	2.62	20,092
The Timken Co	4,497	9	13	3.5%	3.25	0.12	8.9%	2.20	3,996
Toro Co	4,515	10	6	8.9%	4.26	0.13	24.5%	9.54	7,102
Whirlpool Corp	19,724	9	14	1.0%	6.65	0.07	6.4%	2.67	11,333
MEAN WITH OUTLIERS	14,791	7		2.0%	4.39	0.09	9.2%	2.81	11,817
MEAN WITHOUT OUTLIERS				2.0%	4.39	0.09	7.6%	2.41	11,817

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 2013-2022

INDUSTRY: Contract Manufacturers									
COMPANY INFORMATION		IMPROVE-MENT	PERFORMANCE				VALUE		
NAME	2022 REVENUE (MS)	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	FUNDAMENTAL AVERAGE SCORE	PRICE TO BOOK	MARKET CAP
2013 - 2022									
Benchmark Electronics Inc	$2,886	5	0.4%	5.95	3.1%	3.6%	6	1.00	1,160
Celestica Inc	$7,250	6	1.6%	5.76	3.0%	6.1%	6	1.10	1,475
Flex Ltd	$26,041	4	-0.8%	6.36	2.3%	7.5%	5	2.44	7,211
Ibiden Co Ltd	$3,573	1	-0.2%	5.64	7.3%	1.5%	6	0.18	500
Jabil Circuit Inc	$33,478	7	7.8%	6.71	3.0%	7.4%	7	2.60	5,698
Kimball International	$666	7	-2.2%	8.32	4.1%	11.0%	7	2.47	486
Plexus Corp	$3,811	9	5.4%	3.76	4.6%	8.2%	8	2.07	1,949
Sigmatron International	$379	3	9.9%	3.03	1.5%	1.5%	5	0.46	29
TTM Technologies Inc	$2,495	1	7.8%	11.21	5.6%	3.2%	7	1.11	1,211
MEAN WITH OUTLIERS	**$8,953**		**3.3%**	**6.30**	**3.8%**	**5.6%**	**6.4**	**1.49**	**2,191**
MEAN WITHOUT OUTLIERS			**3.5%**	**6.30**	**3.8%**	**5.6%**	**6.4**	**1.49**	**1,563**

Diversified Industries

Diversified industries are discrete conglomerates. In 2023, Hubbell and Rockwell Automation made the Winner's Circle in the diversified industrial sector. Prior winners include Ametek and Honeywell. Rockwell Automation. Schneider Electric is driving substantial improvement and is poised to be a future Supply Chain Leader.

Chasing the lower labor cost, dependent on outsourced manufacturing, and building global sourcing relationships, The industry grew 3% while Margins fell by 1%, and Inventory Turns declined by 10% from 2013 to 2022.

Table 23. Diversified Sector Evaluation for the Period of 2013-2022

INDUSTRY: Diversified Industries									
COMPANY INFORMATION		IMPROVE-MENT	PERFORMANCE				VALUE		
NAME	2022 REVENUE (MS)	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	FUNDAMENTAL AVERAGE SCORE	PRICE TO BOOK	MARKET CAP
2013 - 2022									
3M Co	$34,229	28	1.4%	4.07	21%	20.0%	10	8.24044	9,310
ABB LTD	$29,446	18	0.0%	4.46	0%	0.0%	NA	0.00	NA
AMETEK Inc	$6,151	20	6.7%	5.05	23%	11.5%	10	4.19	19,848
Avery Dennison Corp	$9,039	2	4.6%	8.01	10%	13.4%	8	7.09	9,566
Dover Corp	$8,508	16	3.0%	5.25	14%	11.5%	9	4.06	15,240
Eaton	$20,752	14	3.2%	5.47	12%	8.5%	10	2.53	40,435
Emerson Electric	$19,629	3	-1.4%	5.86	18%	14.0%	9	4.93	44,594
Enerpack Tool Co	$571	6	-5.9%	4.55	10%	-2.0%	6	3.02	1,568
Fanuc Corp	$6,529	27	2.3%	2.72	30%	10.5%	8	2.92	35,568
Flowserve Corp	$3,615	24	-2.5%	3.44	9%	7.0%	8	3.42	6,029
Fortive Corp	$5,826	5	1.3%	3.33	17%	12.5%	5	2.59	15,097
Generac Holdings	$4,565	25	15.5%	2.61	18%	11.8%	8	6.92	6,723
General Electric Co	$76,556	26	-5.6%	3.99	7%	-1.5%	6	2.05	133,644
Hillenbrand Inc	$2,941	4	13.0%	5.86	12%	7.7%	9	3.14	2,574
Honeywell	$35,466	10	-0.4%	5.77	17%	14.5%	10	5.91	108,518
Hubbell Inc	$4,948	16	5.4%	4.68	14%	11.5%	10	4.03	7,838
Ingersoll-Rand PLC	$5,916	1	12.6%	1.59	10%	2.1%	4	1.90	8,368
Legrand SA	$8,795	20	4.7%	3.39	19%	9.8%	9	2.81	14,575
MDU Resources Group Inc	$6,974	10	5.8%	14.06	9%	4.0%	7	1.90	5,314
Morgan Advanced Materials	$1,308	23	-0.6%	1.82	11%	9.6%	NA	2.47	689
MSC Industrial Direct Co Inc	$3,692	22	4.8%	3.31	13%	14.4%	10	3.67	4,678
Parker Hannifin	$15,862	12	2.2%	6.40	13%	10.7%	10	3.92	25,503
Rockwell Automation Inc	$7,760	12	2.4%	6.15	18%	21.6%	10	12.88	22,821
Schneider Electric	$36,042	7	1.9%	5.13	14%	7.4%	NA	2.29	56,799
Siemens AG	$78,091	9	-1.5%	3.96	9%	7.7%	8	2.23	102,418
Toshiba	$29,724	8	-8.9%	5.57	2%	4.3%	6	1.56	14,349
Trinity Industries Inc	$1,977	18	-2.0%	3.98	13%	4.9%	8	1.58	3,542
Valmont Industries Inc	$4,345	15	4.3%	5.19	10%	8.1%	9	3.13	3,818
MEAN WITH OUTLIERS	$16,759		2.4%	4.85	13%	9.1%	8.3	3.76	26,646
MEAN WITHOUT OUTLIERS			2.4%	4.50	13%	9.1%	8.3	3.43	26,646

Furniture

Leggett & Platt and Tempur Sealy place into the Winner's Circle. Sleep Number, a four-time award winner, struggles to drive improvement and falls out of the Winner's Circle.

Chasing the lower labor cost, furniture manufacturers outsourced manufacturing and secured global sourcing relationships. As labor prices shifted, margins flattened, and inventory turnover declined 36%.

Table 24. Furniture Sector Evaluation for the Period of 2013-2022

INDUSTRY: Furniture									
COMPANY INFORMATION		IMPROVE-MENT	PERFORMANCE				VALUE		
NAME	2022 REVENUE (MS)	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	FUNDAMENTAL AVERAGE SCORE	PRICE TO BOOK	MARKET CAP
2013 - 2022									
Bassett Furniture Industry	$486	2	7.2%	2.97	4%	8.3%	7	1.29	227
Ethan Allen Interiors Inc	$818	1	1.7%	2.17	9%	10.9%	8	0.90	718
Flexsteel Industries	$544	11	5.2%	3.61	4%	4.7%	8	1.30	248
HNI Corp	$2,362	5	1.9%	10.20	6%	11.7%	9	3.39	1,738
Hooker Furniture	$594	10	16.0%	5.03	6%	7.7%	9	1.48	306
Howden Joinery Group	$2,872	8	8.2%	2.61	17%	41.6%	NA	3.45	2,453
MillerKnoll Inc	$3,946	3	7.7%	5.34	8%	12.9%	8	2.32	1,441
La-Z-Boy	$2,357	6	4.5%	5.33	11%	11.1%	9	4.42	5,572
Leggett & Platt	$5,147	7	9.8%	9.91	7%	9.9%	9	3.15	2,044
NACCO Industry	$242	9	-1.1%	2.85	-18%	8.9%	6	0.72	196
Natuzzi	$494	12	-1.2%	3.00	-3%	-9.1%	3	0.75	99
Sleep Number	$2,114	14	8.7%	7.53	7%	62.5%	6	3.57	1,313
Steelcase	$2,773	13	0.8%	10.75	5%	8.5%	9	2.25	1,764
Tempur Sealy	$4,921	4	15.5%	7.48	12%	11.2%	8	19.25	4,552
MEAN WITH OUTLIERS	$2,119		6.1%	5.63	5%	14.4%	7.6	3.45	1,619
MEAN WITHOUT OUTLIERS			6.1%	5.63	7%	7.9%	7.6	2.23	1,619

Medical Device

For 2023, Intuitive Surgical placed in the Winner's Circle for the fourth time and ResMed for the third time in ten 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 has stepped up to be an industry leader in creating value chains. Over the decade, operating margins fell 1%, and inventory turns declined 9%.

Table 25. Medical Device Sector Evaluation for the Period of 2013-2022

INDUSTRY: Medical Device									
COMPANY INFORMATION		IMPROVE-MENT	PERFORMANCE				VALUE		
NAME	2022 REVENUE (MS)	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	FUNDAMENTAL AVERAGE SCORE	PRICE TO BOOK	MARKET CAP
2013 - 2022									
Ansell Ltd	$1,952	13	1.8%	0.31	1.6%	2.7%	NA	0.87	333
Becton Dickinson and Co	$18,870	14	5.3%	2.68	11.0%	9.8%	8	2.11	2,678
Bio-Rad Laboratories Inc	$2,802	19	3.3%	1.87	10.4%	11.1%	8	1.79	9,417
Boston Scientific	$12,682	21	6.0%	2.39	14.2%	4.1%	5	3.90	41,158
Bruker Corp	$2,531	3	3.9%	1.86	12.8%	10.6%	9	7.09	6,282
Charles River Laboratories International Inc	$3,976	2	13.6%	10.00	14.7%	8.4%	8	4.91	7,355
Coloplast	$3,293	15	5.7%	2.92	32.0%	44.1%	9	21.77	18,912
ConvaTec Group PLC	$2,073	1	2.0%	2.10	12.0%	0.9%	NA	1.93	3,029
Dentsply	$3,922	15	4.1%	3.28	12.3%	-0.7%	8	2.39	10,262
Edwards Lifesciences	$5,382	11	11.2%	1.68	27.7%	21.3%	9	8.83	34,635
Hologic Inc	$4,863	7	10.3%	4.14	20.1%	6.7%	6	4.61	12,966
Intuitive Surgical Inc	$6,222	9	11.6%	3.36	30.7%	15.1%	8	7.27	56,191
Medtronic	$31,686	18	7.6%	2.40	21.5%	6.3%	9	2.61	111,800
Mettler-Toledo International Inc	$3,920	3	5.5%	4.59	23.1%	32.9%	8	47.83	18,269
MicroPort Scientific Corp	$841	20	23.8%	1.12	-8.2%	-3.2%	NA	3.37	2,802
PerkinElmer Inc	$3,312	8	5.7%	3.75	17.5%	7.2%	NA	3.10	10,796
ResMed Inc	$3,578	10	10.1%	3.18	25.2%	15.5%	9	7.48	18,104
Smith and Nephew	$5,215	26	2.5%	0.91	16.5%	9.1%	2	3.42	15,697
Stryker	$18,449	17	8.0%	1.83	19.0%	9.2%	10	5.23	62,448
Teleflex Inc	$2,791	21	6.2%	2.54	17.8%	6.6%	9	3.85	10,841
Terumo Corp	$6,265	21	2.6%	2.21	16.0%	7.6%	10	4.96	28,815
The Cooper Companies Inc	$3,308	24	8.9%	1.74	17.1%	10.2%	10	3.25	12,257
Thermo Fisher Scientific Inc	$44,915	5	14.0%	4.43	16.9%	7.5%	9	3.75	116,250
Waters Corp	$2,972	11	5.0%	3.25	28.8%	21.1%	9	34.54	14,180
West Pharmaceutical Services Inc	$2,887	6	8.9%	4.95	16.9%	14.3%	10	6.86	11,672
Zimmer Biomet Holdings	$6,940	25	5.5%	0.98	17.6%	3.6%	8	2.27	23,192
MEAN WITH OUTLIERS	$7,909		7.4%	2.86	17.1%	10.9%	8.2	7.69	25,398
MEAN WITHOUT OUTLIERS			7.4%	2.58	18.1%	10.9%	8.2	4.17	18,012

Telecommunications

For 2023, the third consecutive year, 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 46%.

Table 26. Telecommunications Sector Evaluation for the Period of 2013-2022

INDUSTRY: Telecommunications									
COMPANY INFORMATION		IMPROVE-MENT	PERFORMANCE				VALUE		
NAME	2022 REVENUE (MS)	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	FUNDAMENTAL AVERAGE SCORE	PRICE TO BOOK	MARKET CAP
2013 - 2022									
Adtran	$1,026	11	7.6%	3.01	0.3%	1.1%	7	1.97	986
Avnet	$24,311	11	8.0%	6.35	3.0%	5.5%	7	1.07	4,795
Belden	$2,606	4	4.4%	5.67	9.9%	2.1%	8	2.68	2,687
Cisco Systems Inc	$51,557	6	1.2%	12.00	25.7%	13.9%	9	3.86	179,138
EchoStar Group	$1,998	2	-2.6%	14.05	8.4%	1.6%	5	0.87	3,185
Ericsson	$27,074	16	-1.9%	5.07	5.9%	4.0%	7	2.32	30,509
Fabrinet	$2,262	7	15.6%	4.82	7.4%	14.5%	9	2.41	2,098
Juniper Networks	$5,301	1	2.1%	15.28	13.3%	5.3%	8	2.05	9,933
Motorola Solutions	$9,112	10	4.1%	8.68	18.9%	17.9%	5	1.12	23,626
Nokia Oyj	$26,271	13	5.6%	5.83	6.4%	4.4%	6	1.90	27,815
Rogers Communications Inc	$11,834	7	-0.3%	22.40	23.0%	6.6%	7	1.74	18,581
Skyworth Digital Holdings Ltd	$7,963	13	9.0%	4.11	4.1%	6.7%	NA	0.11	388
TELUS Corp	$18,292	5	5.4%	15.47	18.0%	6.3%	8	2.88	29,290
T-Mobile US Inc	$79,571	3	15.8%	15.36	9.0%	3.8%	6	2.21	78,877
Ubiquiti Networks	$1,692	7	19.4%	5.53	33.4%	57.6%	8	13.15	9,192
Vodafone Group PLC	$52,993	15	-1.7%	54.20	10.2%	5.1%	NA	0.83	73,258
Vtech	$2,371	17	3.0%	4.17	10.6%	32.7%	NA	4.79	2,619
MEAN WITH OUTLIERS	**$19,190**		**5.6%**	**11.88**	**12.2%**	**11.1%**	**7.1**	**2.70**	**29,234**
MEAN WITHOUT OUTLIERS			**4.2%**	**9.24**	**12.2%**	**8.2%**	**7.1**	**2.05**	**19,865**

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, Taiwan Semiconductor (TSMC) returns to the Winner's Circle for the seventh time, while NVIDIA places for three consecutive years. In the period, margins increased 14% while inventory turnover declined 17%.

Table 27. Semiconductor Sector Evaluation for the Period of 2013-2022

INDUSTRY: Semiconductors									
COMPANY INFORMATION		IMPROVE-MENT	PERFORMANCE				VALUE		
NAME	2022 REVENUE (MS)	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	FUNDAMENTAL AVERAGE SCORE	PRICE TO BOOK	MARKET CAP
2013 - 2022									
Advanced Semiconductor	$22,591	13	13.6%	5.91	9.4%	8.4%	9	0.79	6,266
Advanded Micro Devices	$23,601	20	18.8%	4.32	5.0%	4.9%	5	14.40	48,897
Analog Devices	$12,014	27	18.2%	3.12	27.8%	9.0%	10	3.38	41,158
Applied Materials Inc	$25,785	8	12.6%	2.79	22.7%	21.0%	9	5.72	54,954
Applied Optoelectronics	$223	1	17.9%	2.03	-5.8%	-2.0%	7	1.40	273
AXT	$141	28	6.0%	1.39	4.4%	1.8%	6	1.18	207
ChipMOS Technologies	$792	4	2.8%	7.20	13.2%	9.2%	5	1.34	845
Cirrus Logic	$1,781	17	18.7%	4.49	17.5%	16.2%	8	2.77	3,254
DAQO New Energy	$4,608	12	59.1%	7.50	26.3%	12.1%	5	1.56	1,260
Diodes	$2,001	17	13.1%	3.22	10.7%	7.6%	8	2.20	2,222
Infineon Technologies AG	$15,426	26	12.2%	3.33	13.2%	9.8%	8	3.23	29,167
Intel	$63,054	14	2.1%	3.86	25.8%	15.0%	10	2.57	184,165
Lam Research Corp	$17,227	3	21.8%	3.22	22.0%	19.7%	9	6.17	36,862
Marvell Technology Products	$4,462	22	4.6%	5.32	4.9%	2.6%	6	2.29	20,265
Microchip Technology Inc	$6,821	19	18.4%	3.20	18.2%	6.2%	9	5.35	22,824
Micron Technology Inc	$30,758	6	18.8%	3.42	22.5%	15.6%	8	1.91	48,510
NVIDIA Corp	$26,914	5	23.0%	4.20	24.5%	21.5%	9	12.82	185,599
NXP Semiconductor	$13,205	11	13.0%	3.67	11.8%	8.2%	8	7.90	33,497
ON Semiconductor Corp	$8,326	24	12.1%	2.89	13.3%	9.2%	8	3.49	11,295
Qualcomm	$44,200	14	10.0%	5.60	24.6%	18.7%	9	10.50	118,556
Ricoh	$15,665	25	-4.1%	6.24	3.1%	1.2%	6	1.40	12,666
Semtech	$741	7	5.1%	3.27	10.2%	3.5%	7	4.16	2,791
Silicon Laboratories Inc	$1,024	8	9.1%	4.50	2.2%	13.4%	8	3.43	3,919
Skyworks Solutions Inc	$5,486	14	14.8%	3.73	29.4%	22.3%	8	4.08	16,274
Taiwan Semiconductor	$76,234	8	16.6%	6.19	39.6%	22.6%	10	4.84	274,768
Texas Instruments	$20,028	23	5.0%	2.85	40.4%	29.5%	10	9.50	101,867
Tower Semiconductor	$1,678	21	12.2%	6.27	7.8%	6.5%	6	2.54	2,311
United Microelectronics	$9,385	2	9.7%	6.45	10.8%	7.9%	8	1.25	10,197
MEAN WITH OUTLIERS	**$16,220**		**13.8%**	**4.29**	**16.3%**	**11.5%**	**7.7**	**4.36**	**45,531**
MEAN WITHOUT OUTLIERS			**11.8%**	**4.29**	**16.3%**	**11.5%**	**7.7**	**4.36**	**25,214**

Tires

Over the last decade, the tire industry chased cost and supply chain excellence is evasive. 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 period, operating margin declined 3% while inventory turns decreased 10%.

Table 28. Tire Sector Evaluation for the Period of 2013-2022

INDUSTRY: Telecommunications									
COMPANY INFORMATION		IMPROVE-MENT	PERFORMANCE				VALUE		
NAME	2022 REVENUE (MS)	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	FUNDAMENTAL AVERAGE SCORE	PRICE TO BOOK	MARKET CAP
2013 - 2022									
Bridgestone	$31,519	2	-1.4%	3.68	11.0%	9.2%	9	1.40	27,954
Cooper-Standard Holdings Co	$2,525	4	-0.8%	16.74	3.0%	-1.1%	6	1.56	990
Goodyear Tire & Rubber	$20,805	3	1.1%	4.46	7.0%	5.4%	6	1.75	5,813
Michelin	$30,151	1	1.3%	3.37	11.7%	9.4%	2	1.58	21,021
MEAN WITH OUTLIERS	**$21,250**		**0.0%**	**7.06**	**8.2%**	**5.7%**	**5.8**	**1.57**	**13,944**
MEAN WITHOUT OUTLIERS			**0.0%**	**7.06**	**8.2%**	**5.7%**	**5.8**	**1.57**	**13,944**

Trucks and Heavy Equipment

For 2023, Cummins, Paccar, and United Tractors are Supply Chains to Admire Award winners in the Trucks and Heavy Equipment sector. As a clear industry leader, Paccar wins for six consecutive years. From 2013 to 2022, Operating Margins decreased 1%, inventory turns decreased 6% while growth increased 15%.

Table 29. Trucks and Heavy Equipment Sector Evaluation for the Period of 2013-2022

INDUSTRY: Trucks and Heavy Equipment									
COMPANY INFORMATION		IMPROVE-MENT	PERFORMANCE				VALUE		
NAME	2022 REVENUE (MS)	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	FUNDAMENTAL AVERAGE SCORE	PRICE TO BOOK	MARKET CAP
2013 - 2022									
Agco Corp	$12,651	10	2.8%	3.70	6.7%	8.2%	8	1.84	5,883
Caterpillar	$59,427	13	0.4%	3.10	11.0%	7.2%	8	5.02	79,007
Cummins	$28,074	7	5.6%	4.38	10.0%	16.0%	10	3.47	26,719
Daimler Tzruck Holding AG	$53,726	2	0.8%	2.32	2.5%	2.1%	1	0.29	5,495
Deere & Company	$51,854	10	4.8%	4.90	14.9%	6.3%	9	4.81	59,169
Hitachi Construction	$9,130	5	-2.1%	2.52	6.9%	3.8%	8	0.11	489
Hyster-Yale Materials Handling Inc	$3,548	3	4.1%	4.76	1.8%	5.7%	7	2.36	1,018
Komatsu	$24,962	17	1.1%	2.31	11.3%	6.9%	9	1.48	22,381
Konecranes Oyj	$3,539	15	3.5%	2.59	6.0%	7.0%	9	1.46	1,097
Kubota	$20,543	16	6.7%	3.35	11.0%	6.4%	8	1.81	20,743
Manitowoc	$2,033	14	-4.2%	3.09	3.6%	-2.3%	5	0.97	653
Oshkosh Truck	$8,282	12	0.8%	5.02	7.1%	10.5%	8	2.17	5,243
PACCAR Inc	$28,820	3	6.6%	15.66	10.9%	9.4%	9	2.88	25,129
Terex Corp	$4,418	6	-3.0%	3.74	6.3%	5.2%	5	2.20	2,927
Textron Inc	$12,869	17	0.8%	2.91	7.3%	7.7%	9	2.28	12,539
Traton SE	$42,538	1	2.3%	2.44	3.8%	3.2%	3	0.55	4,574
United Tractors	$8,326	9	6.7%	5.71	17.4%	14.6%	10	1.63	5,600
Volvo AB	$47,207	7	-0.8%	4.98	7.8%	6.7%	8	2.10	29,029
MEAN WITH OUTLIERS	**$19,190**		**5.6%**	**11.88**	**12.2%**	**11.1%**	**7.1**	**2.70**	**29,234**
MEAN WITHOUT OUTLIERS			**4.2%**	**9.24**	**12.2%**	**8.2%**	**7.1**	**2.05**	**19,865**

Process Industry Overview

Peer groups within the process industry manage flows and make-to-stock supply chains. They are dependent on oil prices and agricultural commodities. From 2013 to 2022, 5% of companies in the process industries meet the Supply Chains to Admire criteria.

Process industries tend to be large (averaging 17B$ in annual revenue) with a historical focus on manufacturing excellence. With a historic bias toward marketing and sales-driven processes, ironically, no company in the industry uses channel data well.

Table 30 shows the process industry averages.

Table 30. Overview of the Process Industry

RETAIL	Number of Companies	Average Revenue (M$)	Year-over-Year Growth	Inventory Turns	Operating Margin	Return on Invested Capital	Fundamental Score	Price to Book Value
	Average for 2013-2022							
Beverages	20	$16,500	4.3%	5.34	16.7%	10%	6.43	4.86
Chemical	37	$13,078	2.0%	11.53	4.1%	9.6%	7.41	2.81
Consumer Nondurables	12	$21,052	1.4%	4.78	16.1%	13.4%	7.80	6.00
Containers and Packaging	19	$9,919	7.5%	6.87	12.0%	7.8%	6.90	4.58
Food Manufacturing	31	$19,377	4.5%	6.19	9.7%	6.9%	7.51	3.48
Pharmaceuticals	31	$37,139	6.3%	2.32	21.8%	13.0%	7.50	6.16
Personal Products	12	$8,706	2.4%	2.52	10.9%	9.9%	7.52	4.58

Beverages

Beverage companies compete intensely for a "*share of the throat*." For this period, Monster Beverages returns to the Winners Circle for the fifth consecutive year. Prior winners include Boston Beer and Coca-Cola. In general, smaller regional companies outperform giant and global multinational companies.

Overall profitability of the beverage industry was 15%, falling from 18% in 2019. Compared to 2013, margins fell 1% and inventory turns declined 24%. The companies struggle to manage a balanced scorecard.

Table 31. Beverage Industry Performance and Sector Evaluation for the Period of 2013-2022

INDUSTRY: Beverages									
COMPANY INFORMATION		IMPROVE-MENT	PERFORMANCE				VALUE		
NAME	2022 REVENUE (MS)	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	FUNDAMENTAL AVERAGE SCORE	PRICE TO BOOK	MARKET CAP
2013 - 2022									
Anheuser-Busch InBev	$57,786	18	4.3%	5.10	29.2%	5.1%	8	3.03	163,833
Boston Beer Co	$2,090	13	14.5%	7.62	12.0%	18.4%	2	6.96	4,350
Brown-Forman	$3,933	13	3.8%	0.87	32.4%	21.8%	10	12.95	25,184
Carlsberg	$9,961	3	-1.2%	7.28	14.4%	4.6%	2	2.60	17,812
Coca-Cola	$43,004	13	-0.7%	5.02	25.7%	10.9%	8	9.43	213,234
Davide Campari-Milano	$2,845	12	5.6%	0.99	19.5%	7.0%	9	4.74	10,796
Diageo	$20,577	9	2.5%	0.94	27.7%	12.5%	0	8.19	88,600
Heineken International	$30,287	7	6.3%	7.94	12.6%	5.9%	0	3.18	52,528
Keurig Dr Pepper	$14,057	1	9.6%	9.27	20.3%	9.2%	8	4.37	29,975
Kirin Holdings	$16,602	19	-5.1%	5.17	6.7%	5.2%	7	2.07	15,832
Lassonde Industries Inc	$2,151	6	8.0%	4.39	7.1%	7.5%	10	2.05	1,164
Molson Coors Brewing	$10,701	9	15.2%	9.63	12.0%	3.4%	8	1.31	13,488
Monster Beverage	$6,311	7	11.9%	5.31	31.4%	26.4%	8	8.72	33,427
PepsiCo	$86,392	4	2.9%	9.21	14.9%	14.5%	9	11.72	177,237
Primo Water Co	$2,215	5	2.7%	7.76	4.5%	0.9%	6	1.76	1,805
Remy Cointreau	$1,526	13	1.4%	0.33	20.2%	7.6%	0	3.50	5,673
Thai Beverage	$7,947	13	5.8%	3.75	13.9%	10.5%	7	3.52	13,290
Tsingtao Brewery	$4,790	2	1.9%	6.25	7.9%	10.5%	9	3.29	9,414
United Breweries	$3,122	20	6.5%	4.03	12.2%	10.6%	9	2.22	3,754
Yakult Honsha Co	$3,698	11	-0.6%	5.85	10.3%	6.7%	10	1.62	5,227
MEAN WITH OUTLIERS	**$16,500**		**4.8%**	**5.34**	**16.7%**	**10.0%**	**6.4**	**4.86**	**44,331**
MEAN WITHOUT OUTLIERS			**4.3%**	**5.34**	**16.7%**	**10.0%**	**6.4**	**4.86**	**19,548**

Chemical

Supply chain management is essential to a chemical company's success when sitting three and four levels back in the value chain. Celanese reclaims the spot for the fourth year. CF Industries and Lyondell Basil join Celanese as winners.

After many years of negative sector growth, chemical companies grew 2.3% post-pandemic. Operating margin improved by 2% while inventory turns declined by 11%.

Table 32. Chemical Industry Performance and Sector Evaluation for the Period 2013-2022

INDUSTRY: Chemical									
COMPANY INFORMATION			IMPROVE-MENT	PERFORMANCE				VALUE	
NAME	2022 REVENUE (MS)	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	FUNDAMENTAL AVERAGE SCORE	PRICE TO BOOK	MARKET CAP
2013 - 2022									
Air Products and Chemicals Inc	$12,699	2	1.9%	14.55	20.8%	10.6%	9	4.09	41,991
Akzo Nobel	$11,438	19	4.8%	4.68	9.0%	12.3%	1	2.51	18,297
Albemarle Corp	$7,320	31	15.2%	3.37	19.9%	9.0%	9	3.16	12,427
Arkema SA	$12,181	37	4.4%	0.00	9.8%	7.5%	8	1.44	7,494
Asahi Kasei Corp	$21,924	6	1.2%	3.79	8.2%	7.1%	10	1.17	13,050
Ashland Global Holdings	$2,391	28	-7.8%	3.55	5.1%	4.2%	7	1.38	4,455
Axalta Coating Systems Ltd	$4,884	19	1.9%	4.77	8.8%	1.7%	6	4.70	5,926
BASF	$92,095	30	1.0%	4.44	8.9%	8.2%	9	1.94	74,577
Cabot	$4,321	8	4.4%	5.45	10.3%	2.7%	8	2.65	3,035
Celanese Corporation	$9,673	9	5.7%	5.05	15.5%	15.9%	10	4.06	12,385
CF Industries Holdings	$11,186	12	9.5%	10.99	26.3%	9.5%	8	3.11	11,266
Chemours Co	$6,794	25	0.0%	4.21	9.4%	8.8%	6	5.26	3,615
Covestro	$18,949	26	4.1%	4.47	8.9%	13.9%	6	1.39	8,383
Dow Inc	$13,017	4	-4.5%	4.02	10.0%	7.6%	7	1.44	52,212
Eastman Chemical	$10,580	35	3.2%	4.79	14.7%	8.4%	9	2.45	11,790
Ecolab	$14,188	10	2.1%	5.35	14.0%	6.8%	9	6.07	43,817
Evonik Industries	$19,497	36	1.9%	4.95	9.0%	10.2%	8	1.22	11,388
FMC	$5,802	27	7.5%	2.44	15.9%	9.8%	9	4.30	10,315
Givaudan	$7,462	29	5.2%	3.11	16.5%	11.6%	0	6.64	25,037
H.B. Fuller	$3,749	16	7.6%	5.96	7.9%	4.9%	9	2.36	2,744
Huntsman Corp	$8,023	11	-2.2%	5.52	8.4%	8.7%	8	2.31	5,492
International Flavors & Fragrances	$12,440	34	20.0%	2.82	14.4%	8.0%	9	3.84	15,098
Johnson Matthey PLC	$21,900	16	2.0%	11.53	4.1%	9.6%	0	2.65	7,589
K+S	$5,987	1	4.9%	3.99	11.6%	8.5%	7	0.83	4,012
Kansai Paint Co., Ltd	$3,734	19	1.9%	4.53	8.8%	6.1%	9	0.54	1,194
Lanxess	$8,530	18	-2.6%	4.00	6.7%	4.1%	8	1.73	5,267
LyondellBasell	$50,451	14	3.7%	7.08	13.5%	22.2%	8	4.13	35,024
Mitsui Chemicals Inc	$14,365	22	-1.7%	4.09	5.0%	3.8%	6	0.48	2,440
Nippon Kayaku	$1,646	23	-1.0%	2.21	12.3%	7.0%	9	0.16	307
Nitto Denko	$7,602	7	0.1%	5.86	12.1%	10.6%	10	1.19	7,169
PPG	$17,652	31	3.7%	4.78	11.7%	15.8%	10	5.52	29,878
RPM International Inc	$6,708	24	6.0%	3.96	10.5%	8.8%	9	5.66	8,763
Sensient Technologies	$1,437	15	-0.1%	2.10	12.0%	7.4%	9	3.25	3,030
Solvay	$16,948	13	2.8%	5.19	9.9%	4.0%	8	0.80	8,185
Stepan Company	$2,773	5	4.8%	7.16	7.2%	9.6%	10	2.36	1,888
Symrise AG	$4,871	33	8.2%	2.48	14.0%	8.0%	4	5.00	11,848
Wacker Chemie	$8,657	3	4.7%	4.68	8.8%	8.3%	5	2.05	5,862
MEAN WITH OUTLIERS	$13,078		3.4%	4.92	11.3%	8.7%	7.4	2.81	14,250
MEAN WITHOUT OUTLIERS			2.8%	4.12	10.9%	7.9%	7.4	2.81	9,160

Consumer Non-Durables

In the last decade, 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 Church & Dwight and Clorox made progress.

Post-pandemic, no company was resilient as the chemical sector and transportation costs skyrocketed. As a result, there is no Supply Chain to Admire Award Winner for this sector.

Cross-functional alignment issues grew over the decade, driving a schism between operations and commercial teams. Historically, these companies are marketing-driven, with a large gap between operating and commercial teams.

In this industry, operating margins were down 4%, while inventory turns decreased by 1%. Growth was less than GDP. The sector lost market share to retailers selling generic house brands.

Table 33. Consumer Non-Durables Industry Performance for the Period of 2013-2022

INDUSTRY: Household Non-Durables									
COMPANY INFORMATION		IMPROVE-MENT	PERFORMANCE				VALUE		
NAME	2022 REVENUE (MS)	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	FUNDAMENTAL AVERAGE SCORE	PRICE TO BOOK	MARKET CAP
2013 - 2022									
Church & Dwight Co	$5,376	7	6.3%	6.24	19.0%	13.7%	9	5.95	15,414
Clorox	$7,107	9	2.7%	7.20	17.0%	23.6%	8	49.88	17,981
Colgate-Palmolive	$17,967	6	0.6%	4.75	23.3%	28.8%	7	114.26	62,702
Energizer Holdings Inc	$3,050	3	4.6%	1.47	14.2%	5.5%	4	11.17	2,187
Henkel AG & Co	$23,620	10	1.2%	4.98	13.1%	10.3%	7	2.68	46,088
Kimberly-Clark	$20,175	3	0.4%	6.51	14.5%	21.9%	6	150.78	43,549
Newell Rubbermaid	$9,459	11	6.9%	4.06	9.4%	0.9%	8	2.86	10,746
Procter & Gamble	$80,187	7	-0.1%	6.59	20.5%	12.8%	7	5.47	277,186
Reckitt Benckiser Group	$17,898	3	1.9%	4.33	24.5%	13.5%	NA	5.37	59,927
Spectrum Brands Holdings	$3,133	2	-1.1%	3.45	6.8%	2.0%	5	3.24	2,901
Tupperware Brands	$1,306	12	-6.2%	2.41	13.8%	10.3%	5	8.06	2,103
Unilever PLC	$63,353	1	-0.3%	5.43	16.7%	17.2%	NA	7.81	133,887
MEAN WITH OUTLIERS	**$21,052**		**1.4%**	**4.78**	**16.1%**	**13.4%**	**7**	**30.63**	**56,223**
MEAN WITHOUT OUTLIERS			**1.4%**	**4.78**	**16.1%**	**13.4%**	**6**	**18.26**	**36,135**

Containers and Packaging

For this period, CCL and Packaging Corporation of America (PCA) place in the Winners Circle for the Supply Chains to Admire analysis. Each are four-time winners.

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 2013-2022

INDUSTRY: Containers and Packaging									
COMPANY INFORMATION		IMPROVE-MENT	PERFORMANCE				VALUE		
NAME	2022 REVENUE (MS)	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	FUNDAMENTAL AVERAGE SCORE	PRICE TO BOOK	MARKET CAP
2013 - 2022									
Amcor	$14,544	14	2.2%	5.44	9.0%	8.1%	3	0.76	3,431
AptarGroup	$3,322	14	3.8%	4.89	13.0%	1.6%	1	0.09	6,049
Ball Corp	$15,349	4	6.2%	5.92	9.9%	5.9%	8	6.46	16,720
Berry Plastics Group	$14,495	4	12.3%	6.27	9.3%	4.3%	6	5.11	6,182
CCL Industries	$6,382	8	18.0%	7.57	13.8%	10.7%	9	3.68	8,560
Crown Holdings	$12,943	19	5.0%	5.42	11.0%	5.6%	6	167.11	8,798
Graphic Packaging Holding	$9,440	7	8.8%	5.48	9.2%	5.4%	8	3.39	4,587
GREIF	$6,350	4	5.0%	10.25	9.1%	6.1%	8	2.47	2,933
Intertape Polymer Group	$10,928	2	0.3%	6.70	9.8%	6.5%	9	3.14	18,905
International Paper	$21,161	10	0.3%	6.70	9.8%	6.5%	7	3.14	18,905
Orora Ltd	$2,966	1	2.9%	4.66	1.4%	7.3%	NA	1.66	1,543
Owens-Illinois	$6,856	17	0.0%	5.62	9.6%	3.4%	5	5.69	3,043
Packaging Corporation of America	$8,478	11	12.8%	6.43	14.8%	12.9%	10	4.06	9,545
Sealed Air	$5,642	2	-1.5%	5.79	13.8%	9.5%	5	17.09	7,789
Silgan Holdings	$6,411	8	6.2%	5.80	9.0%	7.5%	9	3.90	3,631
Smurfit Kappa Group PLC	$13,515	16	4.2%	7.34	10.5%	5.4%	3	2.17	7,665
Sonoco Products	$7,251	11	4.5%	8.89	9.0%	7.5%	10	3.03	5,232
Westrock	$21,257	18	9.0%	7.03	7.9%	4.4%	9	0.84	9,213
Winpak	$1,181	13	6.1%	4.77	16.7%	12.6%	9	1.64	1,523
MEAN WITH OUTLIERS	$9,919		5.6%	6.37	9.7%	6.9%	6.9	12.39	7,592
MEAN WITHOUT OUTLIERS			5.6%	6.15	10.3%	6.9%	6.9	3.01	7,510

Food

In the Supply Chains to Admire 2023 analysis, there are no winners in the food industry. Hormel is the closest but misses on growth.

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? Significant shifts in M&A in the food industry created weaker players. Changes included the growth of generic products by retailers, a rise in commodity prices, and shifts to natural and organic food products. The industry experienced a 1% decrease in margin and a 22% decrease in inventory turns.

Table 35. Food Manufacturing Sector Evaluation for the Period of 2013-2022

INDUSTRY: Food									
COMPANY INFORMATION		IMPROVE-MENT	PERFORMANCE				VALUE		
NAME	2022 REVENUE (MS)	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	FUNDAMENTAL AVERAGE SCORE	PRICE TO BOOK	MARKET CAP
2013 - 2022									
Archer Daniel Midland	$101,556	4	11.3%	6.67	3.0%	7.2%	8	1.49	29,783
B&G Foods	$2,163	24	13.6%	3.18	14.0%	3.9%	9	2.93	1,831
Bunge Ltd	$67,232	1	2.2%	8.12	2.0%	4.5%	6	1.59	10,760
Campbell Soup	$8,562	26	2.6%	5.36	15.4%	10.9%	8	8.38	14,634
Charoen Pokaphan Foods PLC	$17,555	17	4.7%	4.72	3.8%	2.9%	8	1.06	4,764
ConAgra Foods	$11,536	11	-0.7%	4.97	11.0%	4.2%	7	2.60	14,918
Danone SA	$29,171	5	1.1%	7.36	13.7%	6.1%	NA	2.64	42,973
Ebro Foods SA	$3,126	19	1.3%	2.43	8.9%	5.7%	NA	1.35	3,119
Flowers Foods Inc	$4,806	18	4.9%	11.62	7.1%	8.6%	9	3.69	4,642
Fresh Del Monte Produce Inc	$4,442	22	2.7%	7.06	3.4%	3.6%	7	1.00	1,762
Freshpet	$595	5	30.3%	7.45	-5.1%	-13.6%	4	6.60	1,759
General Mills	$18,993	20	1.4%	7.13	16.6%	10.4%	8	5.51	34,881
Glanbia	$5,950	7	8.7%	6.05	6.4%	10.5%	NA	2.93	3,956
Golden Agri-Resources	$11,439	2	7.6%	6.21	4.8%	3.0%	5	0.68	3,079
Grupo Nutresa SA	$4,042	7	20.8%	6.45	9.3%	8.2%	8	0.63	1,479
Hershey	$10,419	22	4.7%	5.28	20.6%	20.8%	9	18.01	28,222
Hormel Foods	$12,459	13	4.4%	7.30	11.2%	15.1%	10	3.98	20,770
Ingredion Incorporated	$7,946	9	1.7%	5.85	11.3%	8.7%	9	2.59	6,752
Kellogg Co	$15,315	28	0.9%	6.89	11.5%	10.1%	8	8.52	23,125
Maple Leaf Foods	$3,643	31	-1.1%	7.34	2.8%	7.5%	7	1.69	2,604
McCormick	$6,351	24	4.8%	3.54	15.9%	10.9%	9	5.84	16,904
Mondelez	$31,496	30	-0.8%	6.23	13.9%	7.8%	7	2.64	72,730
Nestle	$99,379	10	0.4%	4.81	16.6%	12.0%	NA	4.81	277,603
Orkla ASA	$6,069	15	4.0%	3.46	11.2%	9.0%	7	2.09	8,759
Pilgrim's Pride Corporation	$17,468	14	8.2%	8.50	7.3%	15.0%	6	3.27	6,007
Post Holdings Inc	$5,851	11	26.3%	6.71	9.4%	0.7%	5	1.20	3,483

INDUSTRY: Food									
COMPANY INFORMATION		IMPROVE-MENT	PERFORMANCE				VALUE		
NAME	2022 REVENUE (MS)	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	FUNDAMENTAL AVERAGE SCORE	PRICE TO BOOK	MARKET CAP
Smucker's	$7,999	15	4.3%	4.75	16.3%	6.1%	9	1.84	13,199
The Hain Celestial Group Inc	$1,892	29	4.0%	5.16	7.8%	2.1%	7	2.43	3,670
The Kraft Heinz Co	$26,485	20	4.5%	5.71	19.5%	3.9%	6	2.42	58,620
Tree House Food Inc	$3,454	27	8.8%	5.09	5.0%	-1.4%	6	1.54	2,944
Tyson Foods Inc	$53,282	3	5.1%	10.40	6.7%	9.6%	9	1.87	22,783
MEAN WITH OUTLIERS	$19,377		6.2%	6.19	9.7%	6.9%	7.5	3.48	23,952
MEAN WITHOUT OUTLIERS			4.5%	6.19	9.7%	6.9%	7.5	2.99	15,497

Personal Products

L'Oréal is the Supply Chains to Admire Award Winner for 2023. The Company has made the winner's circle for seven out of the ten Supply Chain to Admire analysis. The focus on customer-centric innovation drives results.

Estee Lauder was a winner in 2015 but loses ground in the industry despite extensive investment in digital innovation.

Industry margin increased by 9% as inventory turns decreased by 6.3%.

Table 36. Personal Products Sector Evaluation for the Period of 2013-2022

INDUSTRY: Personal Products									
COMPANY INFORMATION		IMPROVE-MENT	PERFORMANCE				VALUE		
NAME	2022 REVENUE (MS)	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	FUNDAMENTAL AVERAGE SCORE	PRICE TO BOOK	MARKET CAP
2013 - 2022									
Beiersdorf	$9,279	3	2.0%	3.23	13.9%	13.1%	3	2.69	17,531
Coty	$5,304	1	3.9%	2.61	3.6%	1.4%	5	10.12	8,521
Estee Lauder	$17,737	4	6.4%	1.68	16.6%	19.5%	10	12.41	60,487
Herbalife Ltd	$5,204	10	2.9%	2.38	12.3%	23.0%	6	7.62	5,280
Inter Parfums	$1,087	6	7.5%	1.69	14.2%	7.9%	10	3.71	1,781
Kao Corporation	$11,895	10	-0.5%	4.21	11.5%	12.9%	9	3.43	24,043
L'Oreal	$40,349	6	4.1%	2.79	18.2%	14.8%	NA	4.88	146,932
Natures Sunshine Products	$422	12	1.8%	2.08	4.2%	6.3%	7	1.79	239
Nu Skin Enterprises	$2,226	9	2.0%	1.86	11.5%	15.4%	9	3.82	3,212
PZ Cussons PLC	$798	5	-4.9%	3.34	12.1%	6.7%	NA	0.22	105
Revlon Inc	$1,980	8	4.6%	2.56	6.7%	-7.6%	4	0.00	1,105
Shiseido Co Ltd	$8,185	2	0.9%	1.89	6.4%	5.0%	7	4.28	17,277
Packaging Corporation of America	$8,478	11	12.8%	6.43	14.8%	12.9%	10	4.06	9,545
Sealed Air	$5,642	2	-1.5%	5.79	13.8%	9.5%	5	17.09	7,789
Silgan Holdings	$6,411	8	6.2%	5.80	9.0%	7.5%	9	3.90	3,631
Smurfit Kappa Group PLC	$13,515	16	4.2%	7.34	10.5%	5.4%	3	2.17	7,665
Sonoco Products	$7,251	11	4.5%	8.89	9.0%	7.5%	10	3.03	5,232
Westrock	$21,257	18	9.0%	7.03	7.9%	4.4%	9	0.84	9,213
Winpak	$1,181	13	6.1%	4.77	16.7%	12.6%	9	1.64	1,523
MEAN WITH OUTLIERS	$8,706		2.6%	2.53	10.9%	9.9%	7	4.58	23,876
MEAN WITHOUT OUTLIERS			2.4%	2.52	10.9%	9.9%	8	4.58	12,689

Pharmaceuticals

The pharmaceutical industry stalled post-recession; AbbVie Pharmaceutical, a biologics manufacturer, was placed into the Winner's Circle for the fourth consecutive year but fell out of the Winner's Circle in this analysis. Regeneron shows above peer group results for performance and value but fails to make the Winner's Circle on Improvement. The winner is Gilead Sciences. Regeneron makes the cut for performance, but loses based on rate of performance improvement to peer group.

In the industry, small companies outperform the larger players. Revenue growth is up 5%, and margins improved by 3% while inventory turns decreased by 6%.

Table 37. Pharmaceuticals Sector Evaluation for the Period of 2013-2022

INDUSTRY: Pharmaceuticals									
COMPANY INFORMATION			IMPROVE-MENT	PERFORMANCE				VALUE	
NAME	2022 REVENUE (MS)	SUPPLY CHAIN INDEX	GROWTH (Year Over Year Revenue)	INVENTORY TURNS	OPERATING MARGIN	RETURN ON INVESTED CAPITAL	FUNDAMENTAL AVERAGE SCORE	PRICE TO BOOK	MARKET CAP
2013 - 2022									
Abbott Laboratories	$43,653	8	9.1%	3.36	13.8%	8.0%	8	4.18	126,297
AbbVie Inc	$58,054	3	12.7%	4.30	31.0%	7.9%	6	18.00	152,114
AmerisourceBergen Corp	$238,587	1	12.1%	13.81	1.1%	7.6%	0	0.93	20,891
Amgen	$26,323	14	4.4%	1.45	38.0%	12.9%	9	11.62	122,845
Aspen Pharmacare Holdings Ltd	$2,535	23	3.9%	1.53	24.5%	6.8%	1	2.60	7,879
Astellas Pharma Inc	$11,546	18	-0.6%	2.04	15.1%	12.3%	9	2.40	28,428
AstraZeneca plc	$44,351	26	5.6%	1.97	9.7%	6.5%	7	6.07	115,531
Baxter International Inc.	$15,113	11	1.8%	3.56	9.1%	10.1%	9	3.77	30,770
Bayer	$53,509	16	1.0%	1.86	11.4%	6.0%	8	2.52	82,708
Biogen Idec Inc.	$10,173	16	7.4%	1.68	39.8%	21.1%	9	4.86	54,358
Biomarin Pharmaceutical Inc	$2,096	29	15.8%	0.58	-13.4%	-2.9%	6	5.62	15,220
Bristol-Myers Squibb Co.	$46,159	6	11.4%	4.00	16.7%	8.9%	9	5.42	114,944
Catalent Inc	$4,828	2	11.5%	5.24	13.4%	4.0%	6	4.25	7,688
Daiichi Sankyo Co Ltd	$9,308	15	-2.0%	2.00	9.8%	7.1%	8	2.73	30,499
Eli Lilly and Company	$28,541	12	2.7%	1.53	23.3%	18.7%	9	17.93	142,161
Gilead Sciences	$27,281	3	15.4%	3.62	48.6%	20.6%	9	5.73	102,259
GlaxoSmithKline	$36,313	30	-0.8%	1.81	19.7%	16.3%	6	54.27	83,035
Ipsen SA	$3,329	7	7.6%	2.49	23.2%	15.3%	NA	3.75	7,099
Johnson & Johnson	$94,943	25	3.6%	2.85	26.0%	15.6%	9	5.21	357,649
Merck and Company	$59,283	13	2.7%	2.65	19.6%	12.1%	9	5.12	181,588
Novartis AG	$51,828	28	0.1%	2.39	19.3%	12.1%	9	2.97	200,779
Novo Nordisk A/S	$25,085	20	6.5%	1.22	42.1%	68.2%	10	18.46	156,836
Perrigo Co PLC	$4,452	20	7.1%	3.01	11.4%	-1.4%	7	1.55	11,701
Pfizer, Inc.	$100,330	9	9.5%	1.84	26.0%	14.0%	9	3.19	221,762
Regeneron Pharmaceuticals Inc	$12,173	22	28.1%	1.29	38.0%	25.0%	8	8.18	48,637
Roche Holding	$66,351	24	2.3%	2.25	29.1%	22.9%	NA	9.63	256,639
Sanofi S.A.	$47,867	19	0.5%	1.56	21.1%	7.3%	8	1.72	118,863
Santen Pharmaceutical Co Ltd	$2,372	26	5.1%	2.75	18.9%	10.8%	9	2.64	5,998
Teva Pharmaceutical Industries Limited	$14,925	31	-2.8%	2.09	19.4%	-3.2%	6	1.28	25,565
United Therapeutics Corp	$1,936	3	8.2%	1.41	40.2%	19.6%	9	3.07	6,923
Zoetis Inc	$8,080	9	6.5%	1.25	29.3%	14.5%	9	19.34	48,954
MEAN WITH OUTLIERS	$37,139		6.3%	2.69	21.8%	13.0%	7.5	7.71	93,117
MEAN WITHOUT OUTLIERS			6.3%	2.32	21.8%	13.0%	7.5	6.16	93,117

Research Methodology

Year after 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 2013-2022 to help companies see the pattern of the entire decade. ❄

Calculations

The methodology used to define the 2023 winners outlined in this report is as follows:

- **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 analyzed 512 public companies. There is no such thing as a perfect peer group.

- **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 2013-2022. Our goal was to understand post-recessionary trends.

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

- **Start the Analysis.** We collected publicly available data from balance sheets and income statements to complete the analysis. 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.

- **Defining Improvement.** The base principle of this analysis is that supply chain winners drive improvement while outperforming their peer group. As will be seen, this is hard to do. Our first calculation defined improvement in balance sheet performance 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 stacked and 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 tie, each Company receives the same ranking.

- **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 the industry peer group.

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

- We exclude companies with issues on reporting during the period (M&A) or public offerings.

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

- The research focuses on retail, distribution, and manufacturing companies. The work does not include financial, insurance, or service sectors.

- Within each industry, there are metrics we consider essential, but feel that there is no good data source. 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.

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[2] Supply Chain Index, published by Supply Chain Insights, http://supplychaininsights.com/research-2, 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 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%	**WINNER**
Co B	13	$3,960	0.2	4.3%	0.08	9.8	8.8%	
Co C	6	$2,658	2.5	6.7%	0.06	6.2	1.5%	
... and so on								
MEAN	**5.9%**	**$4,227**	**3.4**	**5.9%**	**0.09**	**6.7**	**7.0%**	
Allowable % from mean (within the margin of error)	*NA*	*-12.6%*	*-26.5%*	*-13.0%*	*-7.3%*	*-18.6%*	*-8.7%*	
GREEN - meeting requirement to qualify as a winner								

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 sector, there can be multiple winners. There is also a possibility of the peer group having no winners. This year's analysis shows no winners for 12 of the 28 industries.

▶ **Peer Group Analysis:** The analysis is only within single industry peer groups. 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: We removed outliers by calculating the industry peer group mean for the value metrics (Market Capitalization and Price to Book Value).

▶ **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.

▶ **Supply Chain Index:** The Supply Chain Index is a ranking within an industry peer group across three measurements:

  1. *Balance -* vector analysis of the rate of change at the intersection of Return on Invested Capital & Revenue Growth for the period

  2. *Strength -* vector analysis of the rate of change at the intersection of Inventory Turns & Operating Margin)

  3. *Resiliency -* the tightness of the pattern at the intersection of Inventory Turns & Operating Margin as measured by the mean distance of years on an orbit chart. ❊

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[3] Major outliers were calculated according to this formula: http://www.wikihow.com/Calculate-Outliers

[4] Margin of error formula: http://www.dummies.com/education/math/statistics/how-to-calculate-the-margin-of-error-for-asample-mean/

Prior Reports in this Series

In the twelve 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. You can track our progress on our website 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. ❄

About Lora Cecere

Lora Cecere (Twitter ID @lcecere) is the Founder of Supply Chain Insights LLC and is the author of the popular enterprise software blog Supply Chain Shaman currently read by over 329,000 supply chain professionals. She writes as a Linkedin Influencer and is a contributor to Forbes. Lora is an author of twelve books, including Bricks Matter in 2012 and Metrics that Matter in 2014. ❄

Figures & Tables

Congratulations to the 2023 Supply Chains to Admire Winners

APPLE

ASSA ABLOY AB

BORGWARNER

CCL INDUSTRIES

CELANESE

CUMMINS ENGINE

CF INDUSTRIES

DECKER OUTDOORS

GILEAD SCIENCES

INTUITIVE SURGICAL

HUBBLE

HUNTINGTON INGALLS INDUSTRIES

LEGGETT & PLATT

LOCKHEED MARTIN CORPORATION

LYONDELLBASELL

KONINKLIJKE

AHOLD DELHAIZE NV

MONSTER BEVERAGES

NIKE INC.

NVIDIA

NORTHRUP GRUMMAN

PACCAR INC.

PCA

RESMED

ROCKWELL AUTOMATION

ROSS STORES

TAIWAN SEMICONDUCTOR

TEMPUR-PEDIC

TJX

TORO

TOYOTA

WEST PHARMA

UNITED TRACTORS

URBAN OUTFITTERS

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