

EXECUTIVE BRIEF

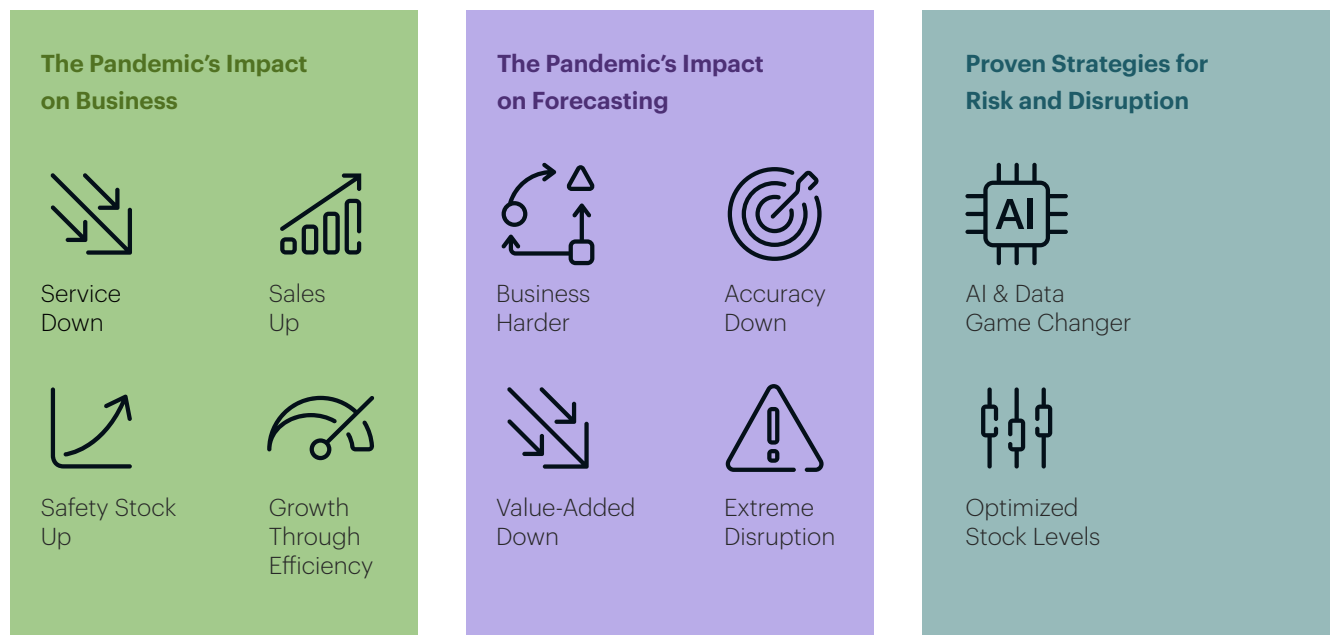
Forecasting and Inventory Performance During the Covid-19 Pandemic

In 2020, the day-to-day activities of virtually everyone around the world changed dramatically. As a result of the pandemic, many lost loved ones or colleagues. Businesses closed, and non-essential employees stayed at home, impacting global economies. Frontline personnel worked tirelessly to care for people that fell ill and keep the rest of us healthy, fed and safe. Manufacturers and supply chain professionals also encountered an unprecedented business environment and rose to the challenge, meeting the needs of a world in lockdown.

The 2021 Forecasting and Inventory Benchmark Study is particularly relevant because it reveals the state of supply chain performance during the Covid-19 pandemic in 2020 and offers a fact-based assessment of the business impacts. Using this baseline, leaders can compare the performance of their organization and consider successful strategies adopted by some of the world's largest manufacturers.

Perhaps most importantly, understanding what actually happened during the pandemic helps leaders prepare for other large-scale disruptions in the future — from new variations of this disease, other global health crises, a rise in weather and climate extremes, geopolitical tensions and even terrorist activities or cyber-attacks. Being better prepared is a crucial factor in helping to build resilient processes to weather these disruptions, support the communities you serve during trying times and emerge stronger than before.

Ten Takeaways for Executives

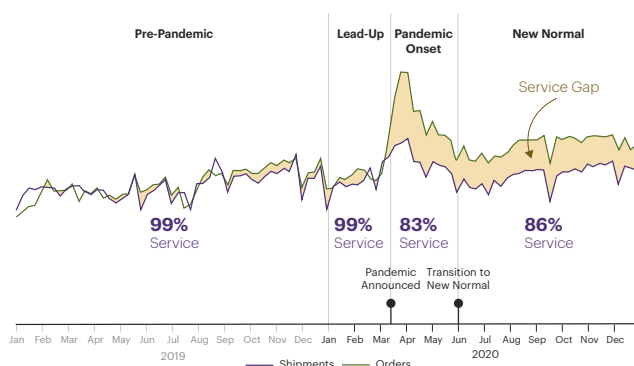


The Pandemic Made Business Structurally Harder Than Ever, Causing a Gap in Service

Data from the study reveals that the Covid-19 pandemic during 2020 breaks down into three stages based on service:

- The “Lead-Up” period included January and February, before the pandemic was officially declared. Service levels during these first two months of the year were consistent with the pre-pandemic baseline.
- In March, the World Health Organization (WHO) officially declared a pandemic, and governments instated global lockdowns. During this “Onset” period of the pandemic, service dropped to 83%, an all-time low and a significant decline from the pre-pandemic baseline of 99%.
- Service levels stabilized in June, creating a “New Normal” for the remainder of the year. The average service level of 86% throughout this period was a slight improvement to the prior months. However, it was 13 percentage points lower than the pre-pandemic baseline.

Service Was Significantly Reduced by the Pandemic and Remains Historically Low in the New Normal



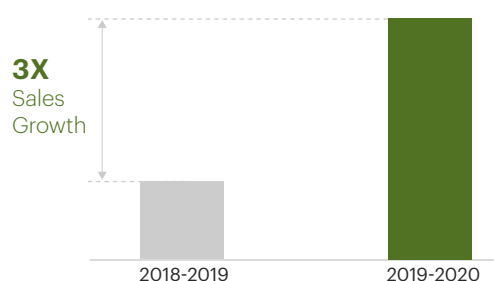
KEY TAKEAWAY

The New Normal that emerged from the lockdowns and stay-at-home orders is one where service has eroded and it is harder to do business than it was before.

Sales Increased, Yielding a Banner Year Driven by a Rise in Demand for Essential Goods

The impact of the pandemic varied considerably by industry. Some experienced demand shocks, supply shocks or a combination of both. For the most part, the companies participating in this study manufacture essential goods to keep people healthy, fed and safe. Demand for these products was especially strong, resulting in the largest sales growth in the history of the study. While record-breaking sales growth is positive, the demand for goods was still greater than fulfillment of orders, reflecting missed opportunities.

Year-Over-Year Sales Growth Nearly Tripled During the Pandemic



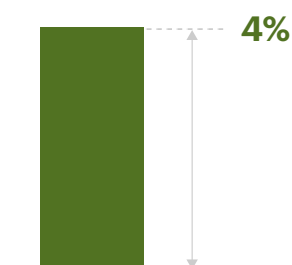
KEY TAKEAWAY

Despite record sales in some industries, there were significant missed revenue opportunities. Sales growth in 2020 could have been even higher if service remained at pre-pandemic levels.

Rise in Safety Stock To Cover Volatility

The largest inventory segment is safety stock to protect against uncertainty. In 2020, safety stock was up 4% compared to the pre-pandemic baseline and accounted for 43% of finished goods inventory.

More Capital Was Invested in Safety Stock to Buffer Against Volatility



Growth in Days
Safety Stock

KEY TAKEAWAY

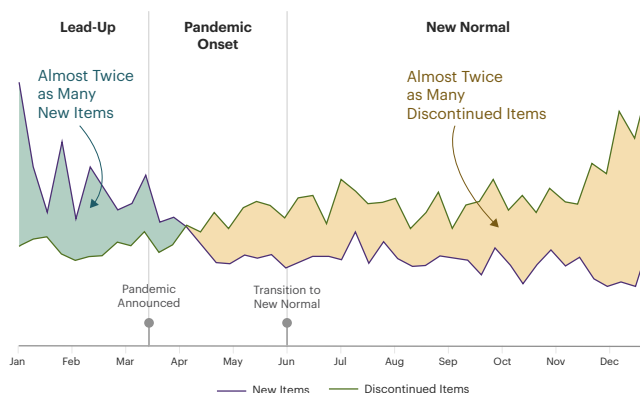
The rise in safety stock is related to the levels of demand and supply volatility, both of which were higher than normal due to the pandemic.



Shift in Strategy From “Growth Through Innovation” to “Growth Through Efficiency”

Historically, manufacturers of fast-moving consumer goods generate demand through a steady stream of introductions, with roughly one-third of items being replaced each year. 2020 was different. It was a time of need, and demand for essential, existing goods was high. The challenge for companies was less about creating new demand than filling orders to cover existing demand. In response, manufacturers adopted strategies to maximize production efficiencies, cutting the rate of introductions in half to focus on existing products trusted by consumers. Furthermore, priority shifted to higher-volume items to reduce changeovers and maximize output.

Shift from Growth Through Innovation to Growth Through Efficiency



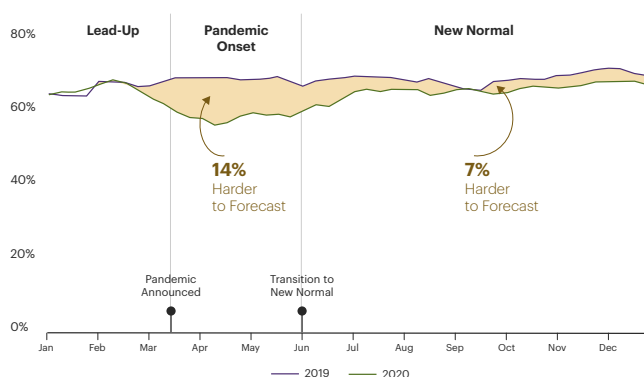
KEY TAKEAWAY

The rapid change in strategy to focus on efficiency and assure supply of essential goods reflects strong corporate commitment to social responsibility.

Businesses Became Structurally Harder To Forecast

Every business decision and every win or loss starts with a prediction of what customers will buy. By extension, every business decision starts with the quality of the forecast. Unfortunately, supply chain forecastability — how easy or hard business is to predict — reached an all-time low during the Onset of the pandemic. Forecastability stabilized at 65% in the New Normal, a 7% drop from the pre-pandemic baseline.

Forecastability Dropped to an All-Time Low During the Onset and Stabilized 7% Below the Pre-Pandemic Baseline in the New Normal



KEY TAKEAWAY

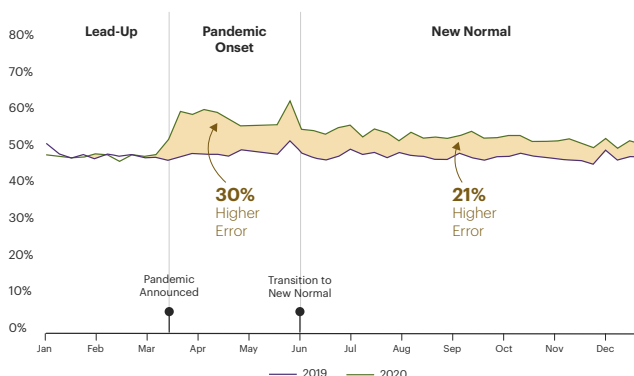
The good old days are gone. Today's environment is inherently more difficult to forecast than it was a decade ago or even a year ago.



Forecasting Performance Dropped to an All-Time Low

With businesses structurally harder to forecast, it comes as no surprise that the accuracy of demand planning eroded. However, the impact on accuracy was even more pronounced because traditional demand planning is based on the assumption that history repeats itself. Forty years ago, when businesses and supply chains were more stable, this assumption was reasonable. However, with each passing year, it has grown less relevant, and was rendered virtually meaningless in the face of a major disruption such as the pandemic.

Significant Growth in Demand Planning Error for All Items During the Pandemic Onset and New Normal



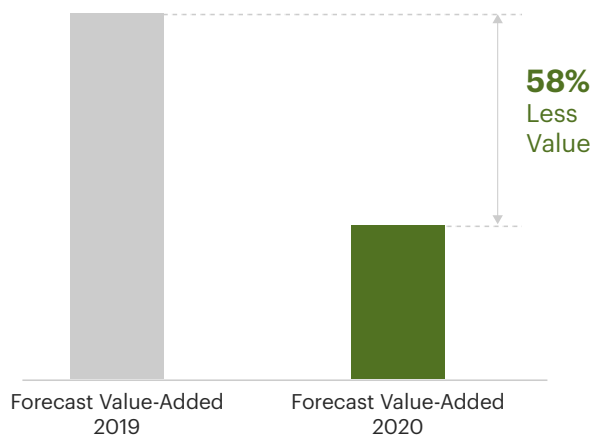
KEY TAKEAWAY

During the Onset and New Normal periods, planning error for all items was 20-30% higher than the pre-pandemic baseline, challenging the belief that “good enough” in demand planning is still good enough.

Value From Demand Planning Investments Fell to an All-Time Low

Large companies invest millions of dollars in the people, processes and systems to predict demand. Each year, the Forecasting and Inventory Benchmark Study measures the value of these investments compared to a simple naïve forecast accomplishable at little to no cost. In 2020, the value from demand planning investments was cut in half because traditional planning solutions were fundamentally disconnected from the current realities on the ground.

The Pandemic Reduced the Value of Forecasting Investments by More Than Half



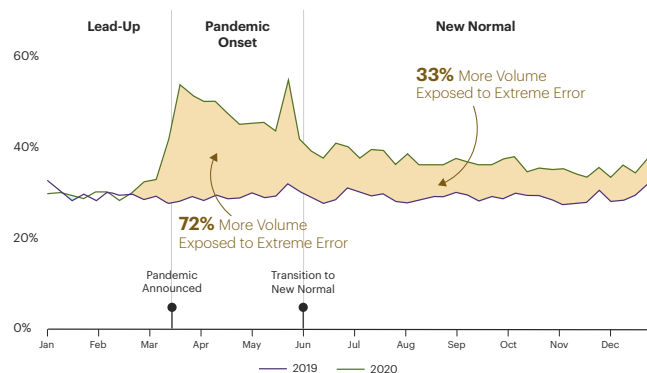
KEY TAKEAWAY

The dramatic loss in value-added by companies' demand planning investments should prompt a re-evaluation of the overall strategy. In the future, the primary value driver will be how well planning teams can connect to current realities on the ground.

The Volume of Business Exposed to Extreme Error Rose to an All-Time High

Supply chains are inherently designed to work in an uncertain environment, with the flexibility to tolerate normal daily error with little impact. The truly disruptive and costly error is when shipments exceed or fall short of forecasts by two times or more. This kind of extreme error exceeds the normal tolerances for supply chains and leads to disproportionate costs or lost revenue. During the pandemic Onset, 46% of all business volume was exposed to extreme error, up 72% from the baseline.

Volume Exposed to Extreme Error Grew Sharply, Signaling Greater Business Risk



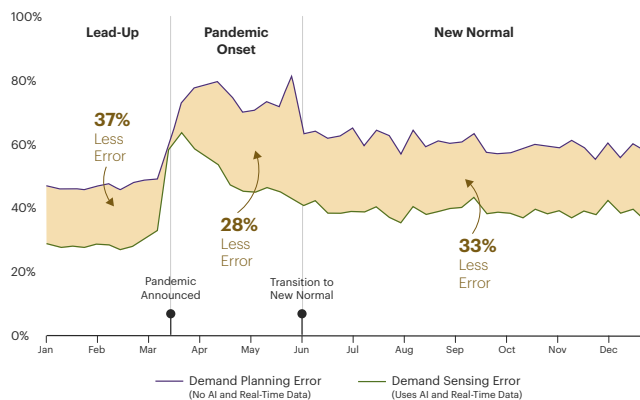
KEY TAKEAWAY

The new normal going into 2021 is a business environment where 36% of volume is exposed to the most costly and disruptive error — 33% higher than before the pandemic.

AI and Real-Time Data Change the Game

As noted earlier, traditional planning processes are disconnected from realities on the ground. However, if planning systems and processes were connected to current realities and could sense changes in buying behavior in real-time, would that help companies manage major disruptions? The answer is yes — even when the disruptions are at pandemic scale. Companies that used artificial intelligence (AI) and real-time data to sense demand reduced forecast error by one-third, performance that was effective at all stages of the pandemic. The volume exposed to extreme error was also cut in half.

Solid Demand Sensing Error Advantage Across All Three Phases of the Pandemic



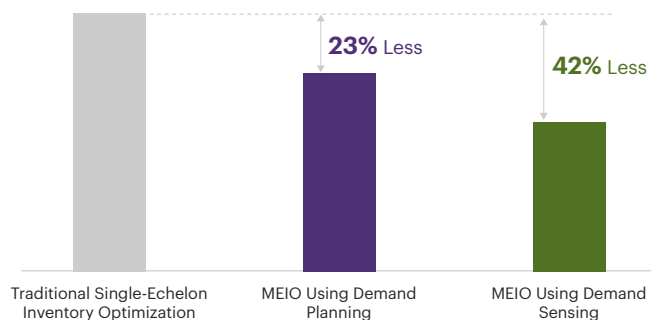
KEY TAKEAWAY

Companies that sensed demand realized six times more value from their demand planning investments, underscoring the importance of using AI and real-time data to enhance traditional approaches.

Best Way To Control Safety Stock Remains Inventory Optimization Combined With Demand Sensing

The use of multi-echelon inventory optimization (MEIO) helped reduce safety stock by 23%. When combined with better forecasts created by sensing demand with AI and real-time data, this reduction grew to 42%.

MEIO Significantly Reduced Safety Stock Levels but MEIO Combined with Accurate Forecasts from Demand Sensing Provided the Most Value



KEY TAKEAWAY

Data confirms that anyone serious about maximizing their return on capital invested in inventory should consider inventory optimization combined with demand sensing.



Key Questions for Decision Makers

It may be tempting to view the pandemic as an anomaly and stay the course in the hope of a quick transition back to the old, pre-pandemic normal. However, the unfortunate reality is that business did not return to normal. Instead, it settled into a new baseline where business is tougher than it was before the pandemic. It is important to note that this is based on data collected before the Delta variant and the string of droughts, floods and wildfires that have taken place in 2021.

The pragmatic response is to recognize that disruption is the new normal and invest in resilient capabilities to mitigate future risk to global supply chains. However, most supply chains have been optimized for — and are deeply entrenched in — the business-as-usual that characterized pre-pandemic times.

Today's supply chain processes span internal operations, multiple tiers of upstream and downstream trading partners, and reach down to the end consumer. These processes, and the inherent dynamics of demand, supply and transportation, are all connected, interdependent and highly reactive. Few companies have sufficiently invested in connecting end-to-end processes and systematically leveraging current information to build resilience.

Data and insights from this study find there are key steps decision makers can take to proactively manage these risks, better achieve corporate goals and emerge stronger after major disruptions:

- Use AI and real-time data to sense demand, understand the impact of current market realities and better predict what customers will order — even in a major disruption like the pandemic. 2020 proved without a doubt that history no longer repeats itself, and demand planning was ill-equipped to manage this scale of disruption. The study found that using AI and real-time data to sense demand cut forecast error by more than one-third across all stages of the pandemic. It also reduced the volume exposed to extreme error by half and drove a six-fold increase in realized value from investments in people, processes and technology related to planning.

- If you are serious about rightsizing inventory levels and costs, consider multi-echelon inventory optimization combined with demand sensing. Data reveals that the use of multi-echelon inventory optimization helped reduce safety stock by 23%. When combined with better forecasts from sensing demand, this number increased to 42%.

For the full version of the 2021 Forecasting and Inventory Benchmark Study, visit www.e2open.com.

About the Study

Each year, e2open® analyzes proprietary supply chain data from its network to create the industry's largest fact-based analysis of forecasting and inventory performance during the prior year. The Forecasting and Inventory Benchmark Study, now in its tenth year, aggregates data directly from e2open's planning applications, providing a true apples-to-apples comparison against a range of metrics. It encompasses over \$200 billion in annual sales from global manufacturers across industries, including consumer packaged goods, food and beverage and animal care. The public version of the study reports on the current state of forecasting, inventory and supply chain performance in North America.

About e2open

At e2open, we're creating a more connected, intelligent supply chain. It starts with sensing and responding to real-time demand, supply and delivery constraints. Bringing together data from customers, distribution channels, suppliers, contract manufacturers and logistics partners, our collaborative and agile supply chain platform enables companies to use data in real time, with artificial intelligence and machine learning to drive smarter decisions. All this complex information is delivered in a single view that encompasses your demand, supply and logistics ecosystems. E2open is changing everything.

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