



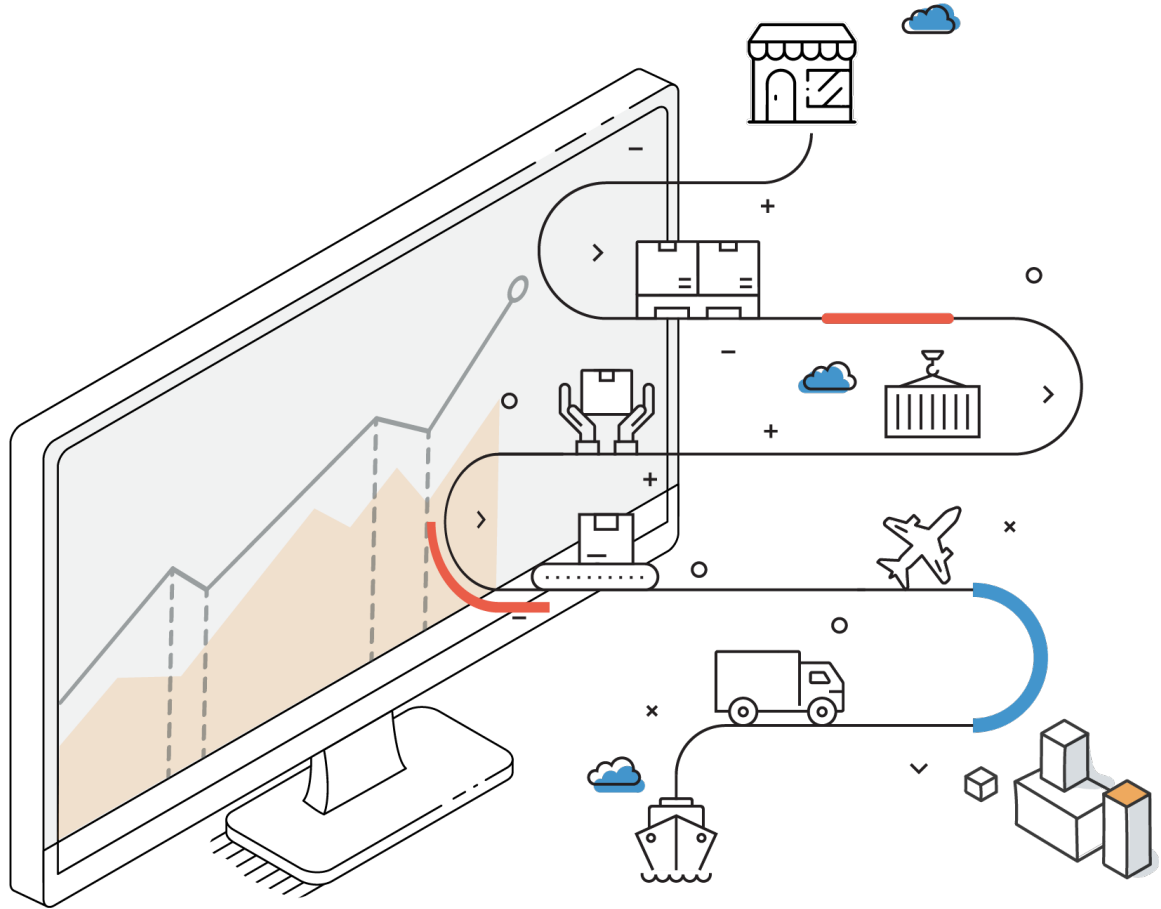
Intelligent Inventory Optimization

THE NEW DILIGENCE AGAINST SUPPLY CHAIN DISRUPTION

Monetize Your #1 Asset: Inventory in these unprecedented times.

CONTENTS

- Causes for Supply Chain Disruptions
- The Impact on the Retail and Wholesale Industries
- What is the “Old” Diligence
- New Diligence: 3 Key Strategies



WHY WE NEED A NEW DILIGENCE AGAINST SUPPLY CHAIN DISRUPTIONS

"Uncertainty is the only real certainty."

We are witnessing the largest global supply chain disruption in our time which has been accelerated by a global pandemic. These disruptions in the supply chain are caused by many factors, like raw material shortages, natural disasters and transportation failures.

Currently, the labor shortage means businesses are unable to stock enough inventory to keep up with the high demand. To survive this surge in demand, businesses need strategies to improve supply resiliency and reduce the risks from future disruptions.

We are always dealing with uncertainty and trying to plan for these situations. The only certain guarantee is that we will continue to deal with supply chain disruptions, but at a greater frequency.

In the worst case, your operations come to a grinding halt. But when you are prepared, you can repair your supply network faster. Even better, you might be able to avoid the disruptions in the first place.

“SUPPLY CHAIN DISRUPTION?”

In the dictionary, disruption is defined as "disturbance or problems that interrupt an event, activity, or process." A supply chain disruption definition is a breakdown in the manufacture, flow of goods and their delivery to customers. If unprepared, the disruption in the flow of inventory hurts businesses. Customers will go elsewhere to find the products they want or need. That's a costly risk.

There are numerous reasons for supply chain disruptions, Here are some of the very relevant external factors staring us in the face today:



NATURAL DISASTERS



CYBER ATTACKS



PRODUCT PROBLEMS



TRANSPORTATION FAILURES/DELAYS



PRICE FLUCTUATIONS



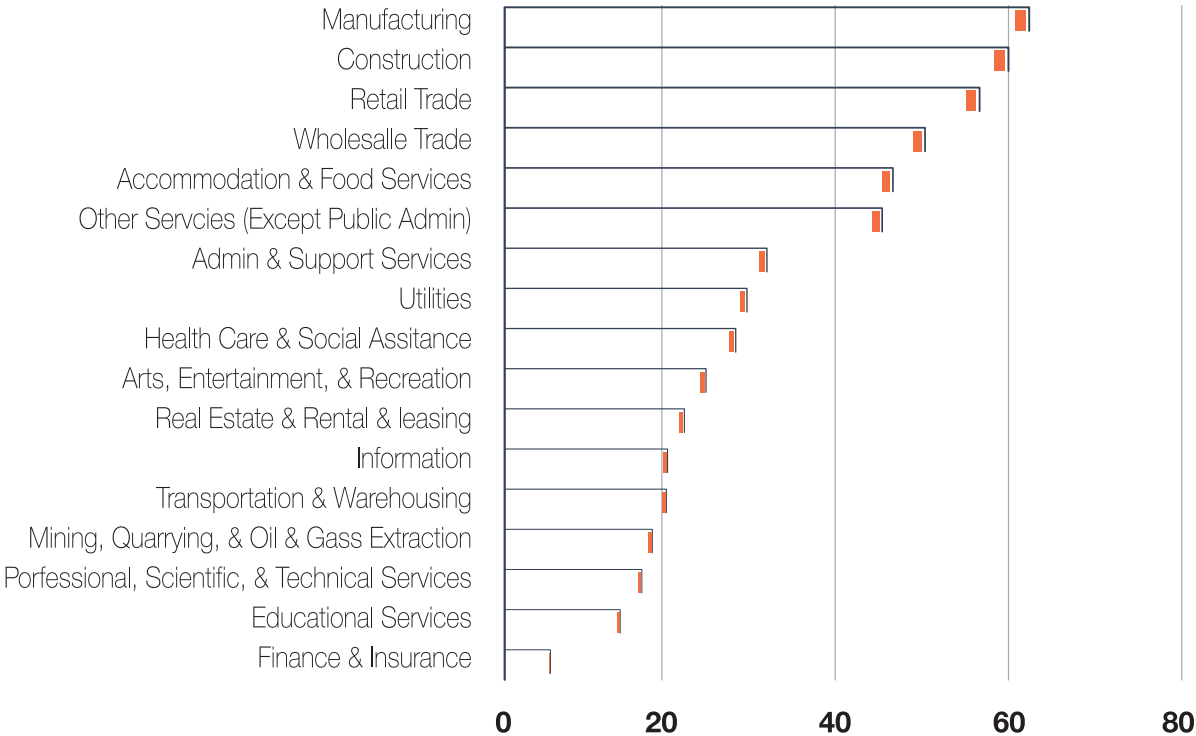
PANDEMICS

IMPACT ON BUSINESS

In a recent article published by the US Census Small Business Pulse Survey reported delays with domestic suppliers, specifically concentrated in manufacturing, construction, and trade sectors. These levels are reported to be much higher than usual, especially pre-pandemic.

Supply-Chain Disruptions By Sector

In the last week, did this business have domestic supplier delays? (percentage saying yes)



Sources: U.S. Census Bureau; CEA Calculations.

IMPACT ON BUSINESSES

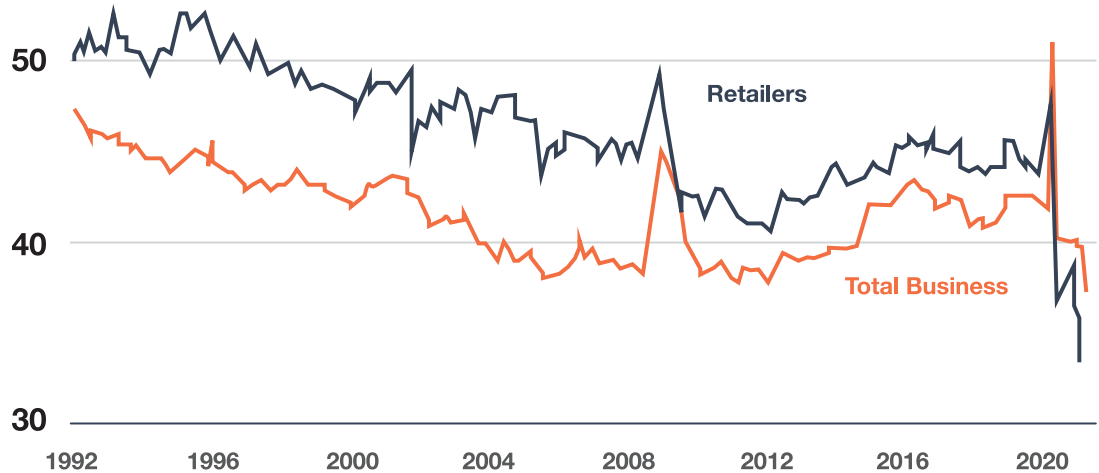
Retail has been affected significantly by the various disruptors - figures show that while retailers had 43 days of inventory in February 2020, today they have just 33 days - that's a 25% overall reduction in available inventory. There simply isn't enough to go around.

Businesses will struggle due to the shortage of inventory during this high demand period due to the most recent global supply chain disruptions.

The new diligence against disruptions focuses on inventory itself, as a way to mitigate risks whenever a major disruption happens.

Businesses Have Little Inventory to Sell

Inventory-to-Sales ratio (days of sales in inventory)



Sources: U.S. Census Bureau; CEA Calculations.

THE “OLD” DILIGENCE

With the focus on inventory as a way to safeguard their supply chains from disruptions, the OLD diligence is not effective enough to minimize the impact interruptions have on businesses, especially in the new reality of frequent, devastating and unpredictable factors.

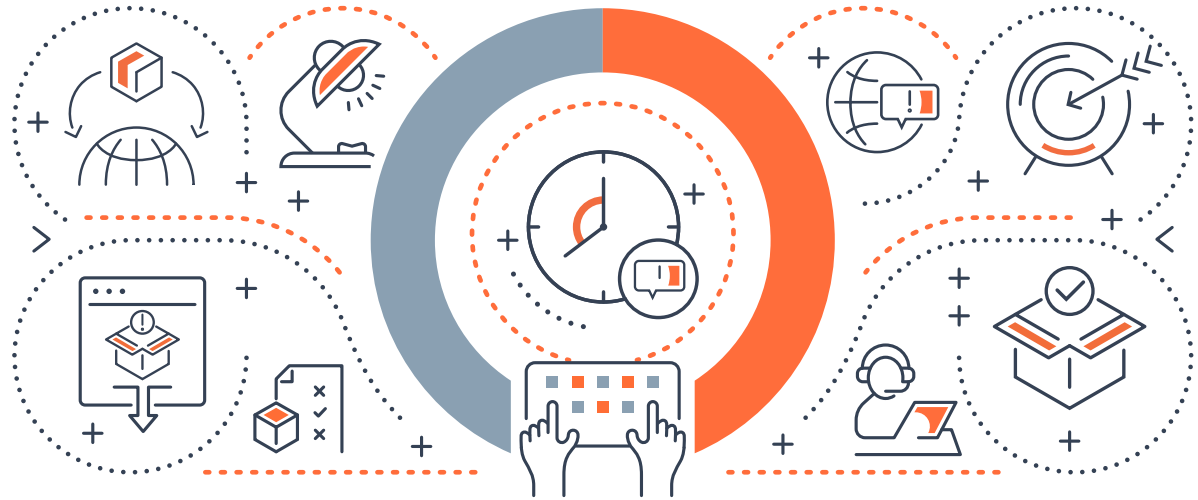
OLD Diligence:

- Traditional inventory calculations, lean, just-in-time inventory management
- Historical demand used to predict future demand
- Responding reactively to interruptions due to lack of preparation

THE “OLD” DILIGENCE

In the past, inventory was often considered as a liability and as such, traditional inventory calculations tended to lean, towards more just in time, or lean inventory calculation methodology. Just like ship it just in time, make sure you keep it as lean as possible, it's a liability, it's a financial liability. It's been very much focused on just in time lean inventory strategies -- those days are over.

Traditional inventory calculations, lean, just-in-time inventory management



THE “OLD” DILIGENCE

Historical demand used to predict future demand: In these unprecedented times, relying on only historical data may no longer be effective in forecasting. The goods in demand in 2020 and 2021 and ways consumers preferred to buy these goods may be exceptions. These historical demand trends are not necessarily reflective of how demand will occur in the future.

Whether you're a business that has seen an increase because you're an essential entity or have seen a decrease in business because stores have closed or a percentage of business has moved to the e-commerce channels, you need to ask if these situations are repeatable and can be truly used to predict growth in the future.

Historical demand used to predict future demand

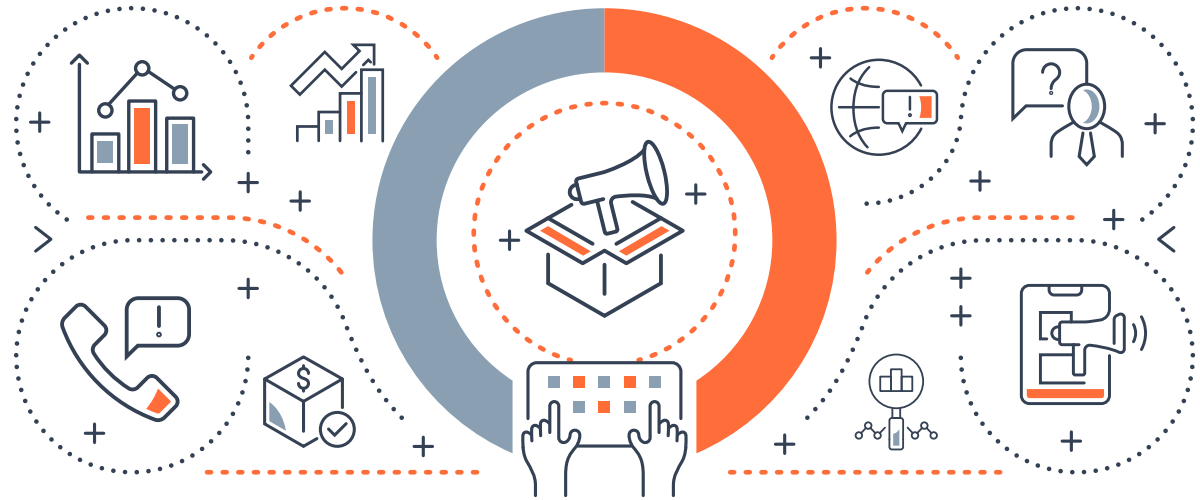


THE “OLD” DILIGENCE

Interruptions have always existed. However, they are now much more frequent and disruptive in nature. The delay or the lack of reactive response to such interruptions has led many companies to go bankrupt, or close to it, as they navigate through some of these complex times.

When inventory is considered a cost, businesses operate in a way to minimize the liability during normal times. Unfortunately, they are not positioned and prepared to protect their supply chain from disruptions.

Responding reactively to interruptions due to lack of preparation



“NEW” DILIGENCE:

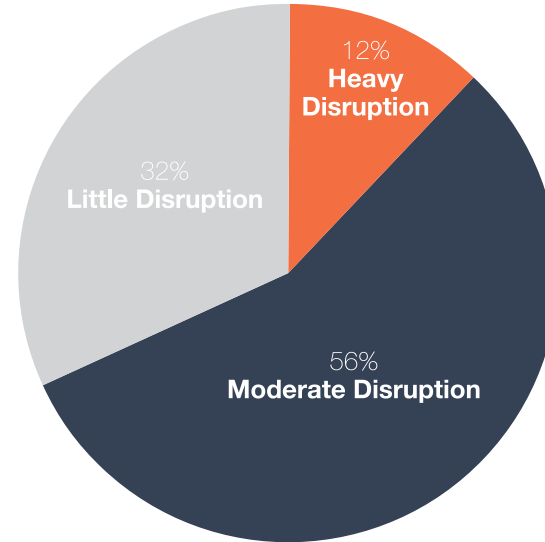
Managing Uncertainty and
Inventory as an Asset

THE “NEW” DILIGENCE

Why do we need a New Diligence against supply chain disruptions?

Prior to 2020, every supply chain in the world was challenged by increasing levels of demand, unpredictability and market volatility. The sudden onset of the pandemic only reinforced a lesson that supply chain professionals have already realized: uncertainty is the only real certainty.

Level of Supply Chain Disruption Faced by Retailers Globally Due to the Coronavirus Pandemic in 2020



Source: RetailNext ©Statista 2021. Additional Information: Worldwide: RetailNext: 2020

THE “NEW” DILIGENCE

Managing Uncertainty

Today businesses must address these issues and develop strategies that enable predictability, account for uncertainty, and build resilience and flexibility. Now is the time for retailers to review inventory performance and revise supply chain strategies. The unexpected level of supply chain disruptions has highlighted the flaws in traditional methods of inventory calculation. The recent past alone, can't inform the future.

The main issues felt by supply chain executives in the retail sector are:



High fluctuation in customer demand and customer channels e.g., seismic shift to e-commerce.



Lack of flexibility allowing quick reaction to change, and meeting customer expectations.

THE “NEW” DILIGENCE

Critical Questions

To answer these questions businesses must shift and consider inventory as an investment or asset, not a liability. As with any investment, there are inherent risks, even during normal times. Businesses must balance the right level of risk and reward to account for disruptions and minimize the impact of unexpected interruptions.

Questions businesses should be asking:



How much inventory should we carry?

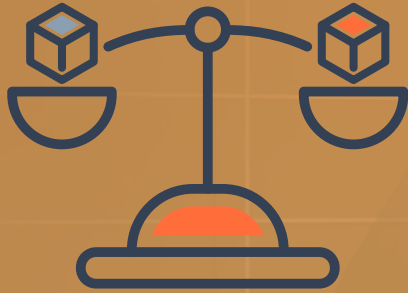


How do we optimize inventory without becoming too lean?



How do we adjust our inventory strategy for the post pandemic era and future disruptions?

THREE NEW INVENTORY MANAGEMENT STRATEGIES THAT ANTICIPATE AND PLAN FOR DISRUPTIONS



Balance risk and reward of the inventory dilemma



Plan to place the right amount of inventory without becoming too lean



Proactively plan a response to increase agility and improve resiliency

THE “NEW” DILIGENCE

Balancing Risk and Reward of Inventory Optimization

Critical Questions

How much inventory is sufficient to safeguard my supply chain from disruption?

Imagine a scale. One side of the scale is Risk, the other is Reward. Risk would be the inventory investment-- the more you invest in inventory, the more risk or exposure. Reward would be when a customer makes that decision to purchase, you actually have the inventory available in-stock.

The Inventory Dilemma



THE “NEW” DILIGENCE

Balancing Risk and Reward of Inventory Optimization

Low Inventory

A low investment in inventory may be keeping inventory levels too lean. The Reward is some happy customers until you sell out. Stock-outs and lost sales results in unhappy customers. The reality is, low risk results in low reward.

The Inventory Dilemma



THE “NEW” DILIGENCE

Balancing Risk and Reward of Inventory Optimization

High Inventory

A high investment in inventory leads to high in-stocks and very happy customers. However, an excess inventory situation creates unnecessary costs and potential lost opportunities. High risk results in medium reward.

The Inventory Dilemma



THE “NEW” DILIGENCE

Balancing Risk and Reward of Inventory Optimization

Right Inventory

The right amount of inventory investment keeps inventory levels relative to demand. Replenishment strategies means both in-stocks and happy customers, minimizing the costs of lost sales and lost opportunities.

The Inventory Dilemma



THE “NEW” DILIGENCE

Planning the Right Amount of Inventory Without Becoming too Lean

Inventory Management strategies that meet the new world include:

- Planning for disruptions on key categories
- Incorporating additional inventories for such disruptions. Businesses need to optimize inventory, without becoming too lean
- Holding additional inventory carries the risk of obsolescence and ties up cash, which runs counter to the just-in-time replenishment and lean inventories

The Right Amount of Inventory

To gear up for the supply chain of tomorrow, businesses must end the era of just-in-time and lean inventory strategies. Businesses must focus on inventory strategies that build inventory in anticipation of future disruptions – because we know they are going to happen.



THE “NEW” DILIGENCE

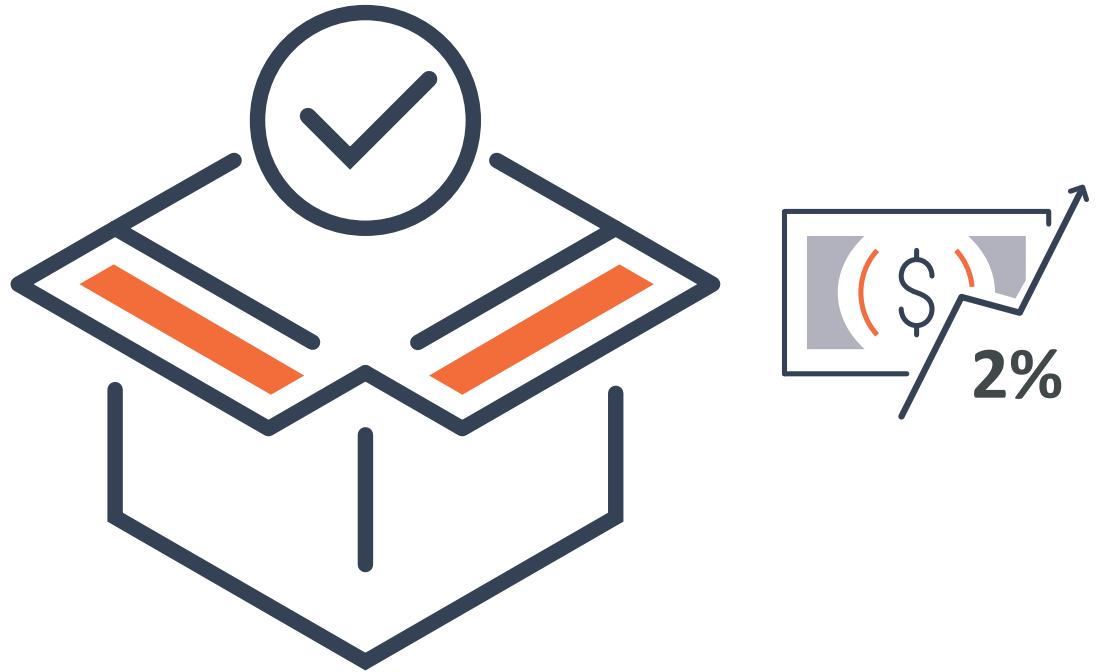
Planning the Right Amount of Inventory Without Becoming too Lean

At the end of the day, optimization is an approach to deal with uncertain outcomes. There is too much uncertainty in consumer demand for a perfect forecast. Forecast uncertainty equals risk. We want to link decisions to their economic outcomes and therefore manage those decisions to maximize profit.

For most retailers, optimizing those decisions using this approach can reduce out-of-stocks, increase customer service, and improve profits by 2% or more.

The Right Amount of Inventory

To gear up for the supply chain of tomorrow, businesses must end the era of just-in-time and lean inventory strategies. Businesses must focus on inventory strategies that build inventory in anticipation of future disruptions – because we know they are going to happen.



THE “NEW” DILIGENCE

Adoption of New technologies to improve overall supply chain agility and resilience.

Invest in technology solutions that plan better, anticipate supply chain challenges, enable increased agility and improve resiliency. Profitable agility relies on a variety of capabilities – including digital control towers guided by artificial intelligence (AI), data science and analytics, strategic product segmentation, inventory management, operational intelligence and analysis, strategic sourcing and effective pricing and promotions management.

Increase Agility and Improve Resiliency

Today, businesses can harness the new capabilities and digitization in machine learning, artificial intelligence that make economic profitable decisions vs. simply chasing service level targets and outdated supply chain metrics.



THE “NEW” DILIGENCE

Adoption of New technologies to improve overall supply chain agility and resilience.

The good news is that the digitization of the end-to-end supply chain is making the complex process of achieving agility over the long term much easier. In a recent 2018 McKinsey publication it was estimated that the payoff of agility enabled by digitization can be staggering – it was estimated that productivity gains and cost savings alone could deliver near-term impact of 200 – 600 basis points of margin expansion.

Increase Agility and Improve Resiliency

Technology enabled AI and ML create better and more accurate real-time forecasts, sense disruptions at the earliest stage, make intelligent materials and logistics sourcing decisions, optimize supply chain execution, and minimize both delivery time and costs.



CONCLUSION

Unfortunately, disruptions are becoming more frequent and more destructive in nature, but for certain we know that they are here to stay, and this is something as a business we need to anticipate and adjust for now and in the future. We have witnessed an adoption of new business strategies and new buying channels e.g., BOPAC which was born overnight, as result of the major global pandemic. What these interruptions have taught us is that inventory management strategies and methodologies of the old diligence are no longer valid and that a new diligence in the new world of disruptions is required in order to thrive.

ABOUT 4R

4R was founded by supply chain experts and academics from The Wharton School and Harvard Business School. Today, we operate where human intelligence, machine-learning, and sophisticated algorithms work in parallel to drive measurable results and proven ROI, down to the individual SKU/Location.

Human intelligence and AI in Parallel



ABOUT 4R

- Draw upon 'optimization theory' for the 4R solutions
- Drive end-to-end supply chain processes, from the initial buy to exit strategy with advanced analytics
- Offer simulation capabilities – what-if, alternatives through superior modeling
- Focus on continuous improvement, flexibility and scalability to cater to and enhance any business

The 4R Approach: A Scientific Advantage



ABOUT 4R

- Increase productivity and redirect focus on high-value activities
- Measurable, proven ROI down to the individual SKU/Location
- Revenue increase in the range of 1% – 5%
- Minimal IT resources are required once solutions are deployed
- Low cost of ownership

Proven Business Results: A Holistic View of the Supply Chain



ABOUT 4R

- Collaborate in strategic planning to help customers achieve specific goals
- Facilitate adoption and utilization of the right tools for their business goals
- Research the “WHY” and provide recommendations at a very granular level
- Provide ongoing coaching and education for continuous improvement

The 4R Customer Success Team: Highly Consultative Engagement



THANK YOU

Mark Garland
President & CEO
4R
610-644-1234
mgarland@4rsystems.com
www.4r.ai