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Unlocking New Growth, Efficiency, and Intelligence with Autonomous Value Chain Optimization and Decision Making

Next Generation Revenue Growth Optimization and Decision Superiority
A Promotion Optimization Institute (POI) + Enterra Solutions Whitepaper

March 2022

Market Trends:

Consumer behavior and the marketplace continues to change.

Consumer behavior continues to evolve as we transition to a post-pandemic retail reality. Inflation is now pervasive, with few exceptions around the globe where consumers have not experienced this level since the 1970s, if at all. Additionally, global strategic re-alignments are going to drive even further change to global sourcing and supply chains. Few sales, marketing, or merchandising executives have ever dealt with these macro forces in their careers, let alone equipped with advanced analytics capabilities used in their everyday decision making.

Over the past 2 years, consumers have learned how to cook and procure their consumer-packaged goods from multiple sources driving changes to their long-term purchasing behavior. They continue to prepare meals at home, and now they are looking for inspiration, convenience, and value during each of their shopping trips. They are looking for recipes, new foods and flavors to try, and ways to create the restaurant experience at home. Yet, they are also time pressed and leading more complex lives as they juggle in-office/home hybrid schedules and kids back in school with after school activities.

Up until recently, most consumers had shopped fewer items, yet with larger basket sizes. Governments, retailers, and consumers are taking fewer extreme safety measures, and most all are benefitting from fewer lock downs and closures. Many consumers are taking an omni-channel approach to how they shop. There is a greater mix of online, plus in-person and client and collect shopping taking place.

Ongoing shortages of raw materials, transportation delays, and other supply chain constraints continue to impact trading partners' ability to keep shelves full to meet increasing consumer demands. COVID-19, social strains, raw material costs, tariffs, and higher fuel costs have added additional complexity for manufacturers.

Shifts in behavior, and other external forces, have accelerated the transformation of leading organizations looking to propel new growth, efficiency, and intelligence.

How have manufacturers reacted?

- Leading manufacturers look to advanced capabilities to provide visibility, insights, prescriptive recommendations, and next best action to take based on current industry and marketplace dynamics.
- Understanding consumer sentiment is critical. How brands are represented, promoted, and resonate during challenging times is critical to supporting our consumers through the global dilemma and pressures.
- Manufacturers need to have multiple promotion and pricing scenarios built and presented to the retailers during the pandemic so retail partners have options depending on how the market is behaving in the moment. Companies with optimization capabilities that reflect

changeable real-world realities have been able to demonstrate increased levels of responsiveness and partnership with retailers.

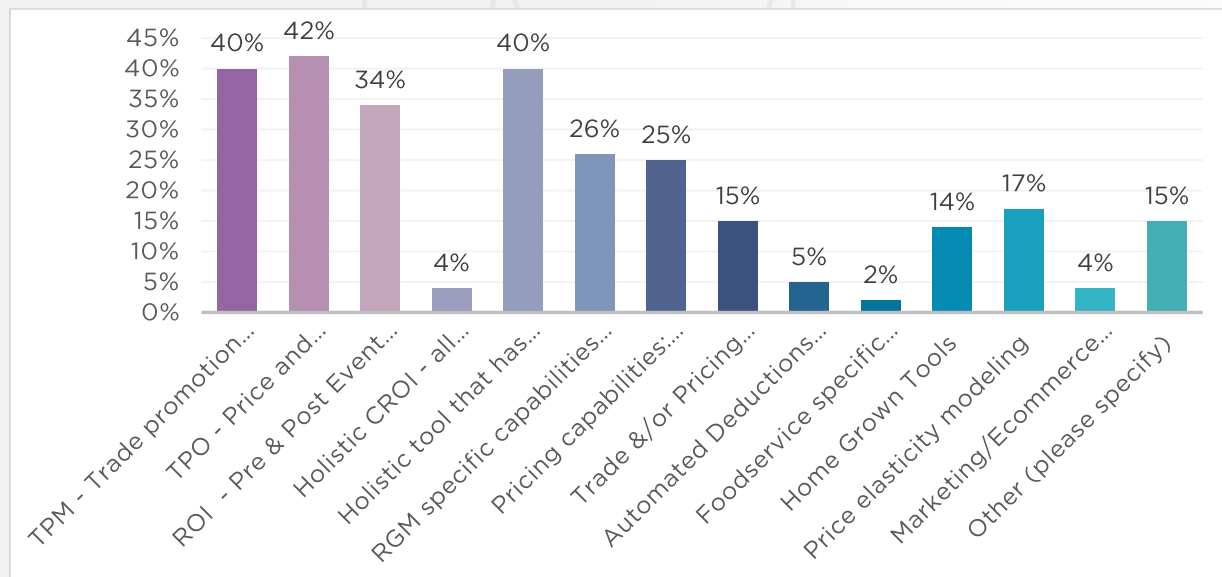
The manufacturers that haven't deployed optimization and/or a Revenue Growth Management (RGM) practice are now looking to add these advanced capabilities to their enterprise planning portfolio to maximize efficiency and effectiveness across the organization.

While transforming and de-siloing your organization takes strategy, leadership, and courage, it is critical to compete in our consumer-focused world where consumers expect personalized promotional offers, greater on-shelf availability, increased value, and purposeful engagement. The Promotion Optimization Institute (POI) recommends companies implement processes and solutions for end-to-end coordination, data, planning, operations, reporting, and visibility **across the full Enterprise value chain**.

POI survey respondents noted (the largest change year over year) 42% (+21) of companies plan to implement Trade Promotion Optimization (a reversal of last year's significant drop). In response to a new category last year, 23% of respondents note they are looking to deploy RGM specific capabilities.

Which of the following EPx technologies will your company be embarking to deploy in 2022? (Select all that apply)

For the complete POI 2022 State of the Industry report, visit www.poinstitute.com

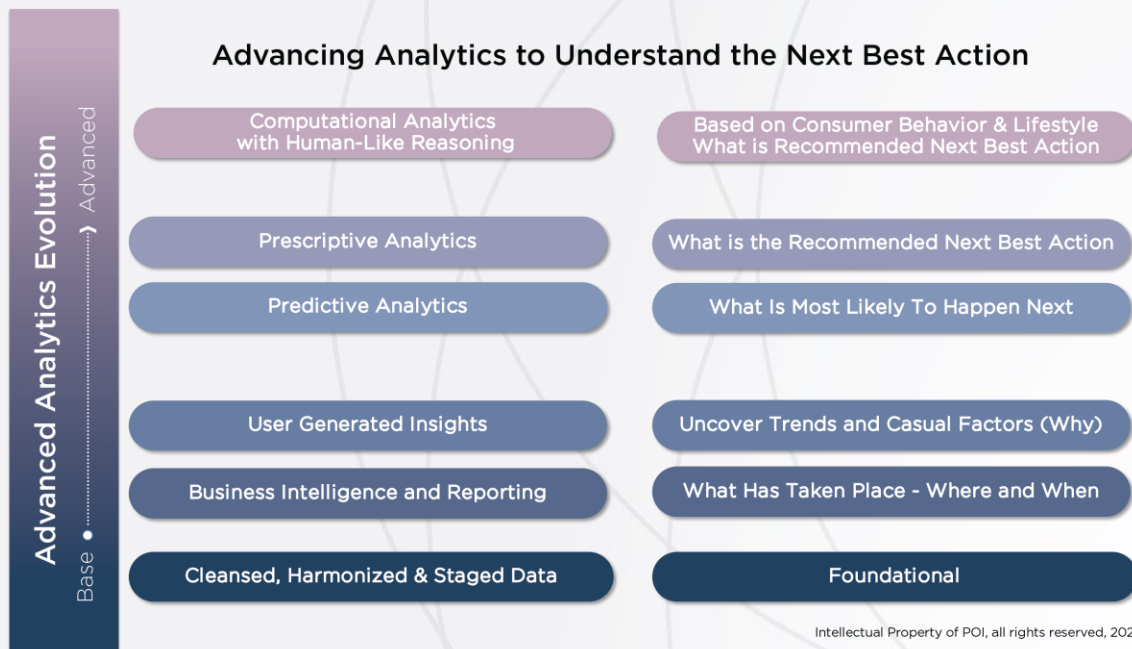


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The Next Frontier: Autonomous Value Chain Optimization and Decision Making

Historically, many companies didn't evolve to Trade Promotion Optimization (TPO), as it was a disjointed swivel seat platform and separate from TPM. Most vendors today enable holistic Enterprise planning with TPM/TPO/ROI in one platform, substantially benefiting the user experience and platform adoption. As a result, advancement into TPO capabilities is becoming a best practice for the CPG industry.

On the horizon POI anticipates optimization with computational analysis combined with human-like reasoning, including sensory, behavioral and lifestyle data will be utilized as the data foundation for Autonomous Value Chain Optimization and Decision Making. This advanced modeling will be the catalyst for unifying Marketing, Innovation, Sales, Finance, Supply/Operations, and Consumer & Product Strategies, while also improving Enterprise efficiencies across the full value chain.



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Historic limitations to perform Autonomous Value Chain Optimization and Decision Making

There have been four core challenges to executing Autonomous Value Chain Optimization and Decision Making:

1. **Business Operating Structure.** Many organizations create and work in silos - Marketing, Sales (Pricing, Trade Promotion, Assortment/Distribution), Supply Chain, and others - with each group focused on executing towards siloed incentives and solving their own challenges with their own data sets. As a

result, solution providers have also organized their offerings to mirror this siloed structure.

2. **Data Limitations.** Principally due to cost, organizations have not saved or had access to historic data on actions and performance at a sufficient level of detail, which has had a negative impact on their ability to harmonize and create a single source of truth across the organization.
3. **Technology.** Historically, software solutions have jumped into the deep end by attempting to model all variables, and leveraging Linear Programming techniques, using simple objectives, to perform “optimization.” When too many variables are introduced – the system fails. The market has lacked a solution capable of handling significant complexity that reflect market realities.
4. **Decision Making:** Traditional software and management practices do not have the ability to make analytic-driven decisions like the best subject matter experts or analysts at the speed of the market. When outputs are produced, they are often too slow to react to the market in real-time and too difficult to action upon without the assistance of data scientists and subject matter experts.

Furthermore, management practices have not been modernized to reflect these new requirements. In today’s outside-in market and data-environment, reliable autonomy in decision making must be a foundational principal to take advantage of market opportunities or mitigate risk.

How Can Historical Challenges Be Overcome?

Manufacturers and retailers can build Autonomous Value Chain Optimization and Decision Making into a sustainable competitive advantage through greater fidelity of insights, autonomous decision making, and speed to action. An end-to-end, intelligent, and insight-based approach is necessary to optimize the allocation of finite commercial resources across the Enterprise and drive new levels of profitable growth, efficiency, and intelligence.

To be successful, manufacturers and retailers will need to adopt an advanced solution with the following attributes:

- **End-to-End:** Insights, optimization, and decision making that spans the entire value chain and its interconnected nature – enabling a “common brain” to be the single source of truth across the Enterprise
- **Outside-In:** Consumer-driven, dynamic, and market sensing response capabilities
- **Anticipatory** (vs. Reactionary): Ability to predict the behavior of market participants with a high level of accuracy
- **Fast:** Actionable insights at the speed of the market

- **Accurate and Reliable:** Out-of-the-box feasible recommendations and decisions for rapid activation
- **Easy to Use:** Insights and recommendations in natural language, increasing scalability and reducing dependence on data scientists and subject matter experts
- **Ecosystem Expansive:** Incorporation and analysis of manufacturers, retailers, consumers, and suppliers to understand the holistic impact of recommendations

Unlocking Autonomous Value Chain Optimization and Decision Making with Enterra's Autonomous Decision Science™ (ADS™)

Enterra's Autonomous Decision Science™ (ADS™) technology has closed historic gaps in market solutions by pioneering the next wave of analytic innovation beyond data science. The technology brings together human-like reasoning AI, glass-box mathematics, and non-linear optimization into one integrated platform, breaking through historical scientific silos, to enable businesses to optimize and automate insight generation in real-time.

Enterra Autonomous Value Chain Optimization and Decision Making System™



This more robust platform output is produced without the need, common with alternative commercial AI platforms, for substantial intervention from human data scientists and subject matter experts. ADS™ enables augmented human intelligence

and drives a next generation set of end-to-end value-chain expansive business applications that unlock previously unobtainable value and efficiency, at-scale and at the speed-of-the-market.

Case Study: How a Global Consumer Packaged Goods Company Leveraged Autonomous Decision Science™ to Transform Their Trade Promotion Practice, Driving Significant Levels of Profitable Growth and Efficiency

For global consumer packaged goods companies, trade promotion is the largest area of spend outside of cost of goods sold (COGS) and human capital, spending billions of dollars on trade and related categories each year.

Enterra's ADS™ platform-powered Trade Promotion Optimization (TPO) system was able to generate annual campaign plans that are at-scale more than 91%+ accurate and 90% feasible with retailers, optimally allocate financial resources, and unlock value previously unrealizable. This disruptive application integrates ADS™ technology with Enterra's modern ADS™ driven management practices into one integrated system. Operationally, the global CPG manufacturer was able to transform their trade planning process to respond at the speed of the market. Enterra's TPO solution was able to autonomously replan promotion calendars for entire categories against every retail planning account in just 5 minutes – normally a 3-week process for people to perform.

The client obtained a 3.6x ROI in the first quarter of deployment and achieved an 11x ROI in the first full year of deployment (ROI is calculated as annual incremental profit to client / annual Solution-as-a-Service fee for Enterra's solution).

Discovering New Levels of Profitable Growth and Efficiency with Enterra's Next-Generation Revenue Growth Optimization and Decision Superiority Solutions

Revenue Growth Management (RGM)

The RGM planning diligence and profit focus has transformed episodic, once-a-year planning into an ongoing and dynamic planning practice deeply rooted in advanced analytics. Companies with established RGM teams have had an advantage during the Covid crisis reset and re-planning period.

RGM teams drive a holistic enterprise approach. RGM touches each of the cross-functions and provides a central governance for the organization, working closely with functions such as marketing, finance, supply-chain, and sales to develop and implement growth, savings and profitability strategies, ultimately transforming the siloed functions into an ongoing streamlined effort to balance goals and needs across the Enterprise.

Throughout the pandemic, RGM teams met through the POI Manufacturer Connect Share Group. Teams shared peer set strategies on how their organizations were resetting and replanning the business. Overall feedback is that these companies are substantially investing in RGM teams and capabilities in 2022.

How Is Your Organization Approaching Revenue Growth Management?

(Select All That Apply)



Throughout the pandemic, RGM teams met through the POI Manufacturer Connect Share Group. Teams shared peer set strategies on how their organizations were resetting and replanning the business. Overall feedback is that these companies are substantially investing in RGM teams and capabilities in 2022.

If your company is looking to build or advance RGM capabilities, join us for POI's Live/Virtual Summits & workshops, POI/CMS RGM Share Group and webinars [poinstitute.com/events/](https://www.poinstitute.com/events/) to connect and dive deeper on the topic.

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Enterra has anticipated this market shift and leveraged its ADS™ technology to develop the Enterra's Revenue Growth Intelligence System™ (ERGIS™). ERGIS™ enables organizations to perform holistic optimization incorporating the strategic revenue components of Price, Trade Promotion, Market Mix, and Assortment in one comprehensive optimization. Enterra's unique approach empowers clients to maximize the return on total demand generation investment.



ERGIS™ balances the goals and constraints of a firm's strategic revenue goals and business strategies into a global objective function and optimization. Clients gain a true understanding of the functional drivers within each revenue component (Price, Trade Promotion, Market Mix, Assortment), and the interplay between components, across dimensions such as time, scale, competitors, and regions. ERGIS™ provides

prescriptive recommendations in natural-language, empowering business users to make intelligent decisions and act in real-time.

Trade promotion has traditionally been the key lever manufacturers can use to drive growth. Enterra's Trade Promotion Optimization (TPO) solution, a solution module within ERGIS™, is designed to operate as a complementary partner to a client's existing Trade Promotion Management system. Enterra's TPO solution adds analysis, optimization, and prescriptive recommendations to determine the best trade promotion schedules as well as the expected performance they will yield.

Enterra's TPO solution provides answers to many of the industry's top challenges:

- **Holistic approach.** The system considers the entire year holistically rather than simply repeating (e.g.) the “best promotion” and balances manufacturer and retailer benefits.
- **Cutting-edge analytical techniques.** The system leverages Autonomous Decision Science™ technology which bridges the gap between computational intelligence and human-like reasoning, going beyond the possibilities of traditional data science.
- **Speed.** The system can replan year-long schedules in a matter of minutes, not hours or days, allowing for greater reactivity to changing consumer behavior and ability to seize market opportunities.
- **More constraint possibilities.** The solution provides optimization allowing for significantly more (>2 dozen) types of constraints than is available in other TPO solutions. Constraints can be generated and maintained at an individual level (i.e., customer or price group) to help drive more accurate recommendations.
- **Business intelligence customization.** The solution provides Microsoft BI integration, which allows for extreme user customization.
- **Computing Architecture.** The system's technical architecture uses distributed message queuing to notify the user interface (UI) when a long-running simulation is complete and allows the number of calculation modules to be dynamically scaled.
- **Cloud-hosted Solution-as-a-Service.** The solution is delivered as a cloud-hosted application with Solution-as-a-Service (SaaS) subscriptions.

Much of today's trade spend is managed to help the retailer achieve an everyday price. This in conjunction with promotions must be managed to achieve the maximum benefit. These two factors work together and influence each other not only from a consumer perception but also in the shifting of purchase habit and investment.

Many factors influence the everyday shelf price:

- Retailer strategy
- Competitor product pricing strategies

- Own brand architecture
- Consumer sentiment
- Investment levels

The combination of the factors above helps create swim lanes for pricing moves and therefore must be evaluated in conjunction with the promotional strategy. These factors need to be evaluated at a local level rather than a national level to help reach the consumers' needs. As a result, manufacturers need a solution to not only visualize feasible options but also help develop a holistic investment plan to meet the consumer needs.

The output of ERGIS™ models address the following areas:

- Swim lanes for everyday pricing, using advanced techniques around clustering, competitor identification and variance analysis
- Valuing the recommendations with multiple optimized promotion scenarios
- Visualizations that provide a holistic view of the pricing architecture at multiple levels within the marketplace

ERGIS™ enhances the ability to drive growth by layering in its Assortment Optimization module which enables clients to generate insights, simulate real-world scenarios, and optimize planograms, ensuring efficiency is maximized and opportunities are spotted and attacked early.

The combination of optimizing Pricing, Promotion, Assortment, and Market Mix in one tool makes ERGIS™ one of the most powerful tools to drive consumer-focused companies forward.

Enterra understands that the market is constantly changing, and enterprises need the agility to identify and adapt to that change quickly. **Enterra's Global Insights & Decision Superiority System™ (Business WarGaming solution)** works in conjunction with Enterra's intelligent value-chain applications to enable enterprises to be systemically resilient and capable of decoding and navigating complexity in an increasingly uncertain and changing competitive business landscape. Enterra's Business WarGaming solution uses Intelligent Agents to autonomously monitor data, perform analysis, and to enable business users to proactively anticipate and dynamically respond to competitive and market changes, the result of which is faster, more informed decisions.

Enterra Global Insights & Decision Superiority System™



Concluding Thoughts

Significant advancements in technology have enabled companies to surpass historical challenges in executing Autonomous Value Chain Optimization and Decision Making. Manufacturers and retailers who embrace the next step in the data science evolutionary journey into Autonomous Decision Science™, and ADS™ powered business applications, will be able to achieve new levels of enterprise resiliency, profitable growth, efficiency, and intelligence. Enterprises will achieve these transformative benefits by leveraging the fast delivery of accurate, actionable, and scalable insights and recommendations, reducing reliance on human data scientists and subject matter experts. To ensure that your company is headed on the right path to transformation and to learn more about how Enterra can help you unlock previously unattainable value, please contact Enterra Solutions or Promotion Optimization Institute directly.



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About Enterra Solutions

Enterra Solutions is the leading cognitive computing company providing data-enabled prescriptive analytics and insights for companies across a broad range of industries. Enterra Solutions automates a new way of problem-solving and decision-making, going beyond advanced analytics to answer queries and generate insights instantly. This powerful capability allows clients to uncover and understand inter-relationships that lead to innovative new product development and innovation, heightened consumer understanding, enhanced supply-chain execution, and more efficient and targeted consumer marketing. Enterra's analytics and insights help the world's leading brands and organizations operate smarter by finding higher meaning in their data.

For more information visit: www.enterrasolutions.com

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About the Promotion Optimization Institute

POI brings together manufacturers, retailers, solution providers, analysts, academics, and other industry leaders with the specific objective of collaboratively improving enterprise planning, promotion management and distribution of consumer goods. Members of POI share cross-functional best practices in both structured and informal settings. Additionally, members benefit through our industry alliances, the Certified Collaborative Marketer (CCM)[™] program, share groups, and industry-leading summits around the globe. POI aims to instill a financial and metrics-based discipline not typically found with other trade groups. The goal of our innovative approach is collaborative promotion optimization. The focus is on the consumer/shopper through sales, marketing, and merchandising strategies. Our POI executive advisory boards keep us apprised of industry needs and help us provide desired outcomes for members, sponsors, and academia. For the complete POI 2022 State of the Industry report, visit www.poinstitute.com

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