# Advanced Analytics in Consumer Goods: Three High-Value Use Cases

by Rein Singfield

Companies that manufacture consumer packaged goods are great candidates for driving real business value from advanced analytics. At this point, we all realize there's potential value, but there's still a lot of hype, and many of the technologies are complex.

Here are some real applications of machine learning and analytics for CPG manufacturers, along with some practical recommendations on how to get started.

## A Little Background on Advanced Analytics and Machine Learning

**Advanced Analytics** is the examination of internal and/or external data sources using machine learning, natural language processing, and other sophisticated techniques to discover deeper insights, make predictions and/or generate recommendations. The capabilities of advanced analytics typically go beyond those of traditional business intelligence.

**Machine Learning** is an artificial intelligence (AI) technique that allows a computer program to learn without being explicitly programmed.

Machine learning algorithms are designed to learn new things in similar ways that humans learn – yet much faster, at a greater scale, and under more complex conditions. Unlike traditional computer algorithms, these grow and change when exposed to new data.

A great example is the 2016 machine learning breakthrough when an algorithm beat a Grandmaster at the game of Go. There are more possible positions on a Go board than there are atoms in the universe ($10^{360}$). Traditional computer algorithms could not handle such a challenge. At first, the algorithm was a blank slate. Then it was trained with historical real-life games. Then it was tested, and its learning was reinforced with game play. Finally, it picked a strategy to win based on statistics.

At the time, it took six weeks to train the algorithm to be a Grandmaster. Today, with the improvements in learning algorithms and computer processing, it would only take three days. For a simple game like Chess, it takes less than an afternoon to go from knowing nothing about the game to defeating a human grand champion.[1]

# So What Does This Mean in a Business Context?

With advanced analytics, companies can drive actionable insights from data that comes from multiple sources and systems (both internal and external). And in the same way algorithms can be trained to make decisions to win a game of Chess, they can be trained to extract meaningful insights from product data, formulate predictions, recommend improvements, and even automate actions within systems and processes.

These predictions, prescriptions and automation can improve marketing effectiveness, increase sales team performance, improve forecasting, optimize the supply chain, and streamline manufacturing.

# Three Valuable Use Cases for Consumer Goods Manufacturers

Here are three use cases we've seen drive real business value.

## Product Lifecycle Intelligence

PLI is the application of advanced analytics across the product development lifecycle to improve results from innovation.

Most companies have collected product data for years, and it's largely untapped. Data in enterprise systems like product lifecycle management (PLM) describes the decisions made on products, and there's an opportunity to combine this with data from other sources like ERP, MES, and other systems. With PLI, companies can drive actionable insights from all of these sources to predict outcomes and prescribe actions to improve results. And it only takes minutes.

As an example, we worked with one company that was searching for ways to optimize R&D cycle time. With PLI, we helped them apply predictive and prescriptive techniques that not only optimized R&D, but also product development and quality processes, which drove substantial cycle time reduction. PLI can transform data management tools into an intelligent decision-making system that benefits the whole enterprise.

Here's a six minute overview of PLI. Check it out to learn about structured data, advanced analytics vs. machine learning, and more about how PLI leverages these technologies to maximize the value of PLM data.

KNOW: The Future of Product Data Analytics from Kalypso LP on Vimeo

## Robotic Process Automation

RPA is an automation tool that completes rule-based tasks in a business process. The traditional goal of RPA is to take the robot out of the human—to complete repetitive and rule-based tasks without human intervention. With RPA, these tasks are completed faster and with more accuracy.

We've seen companies apply RPA to automate and improve data migration to drive business value in the following situations:

- **Data Standardization and Validation:** With RPA, companies can quickly and easily improve data standards use across systems and validate them against publicly available data.
- **Data Confirmation:** An organization can leverage RPA to review and confirm information submitted to a central repository. This data can be from suppliers, consumers, customers, or an internal function.
- **System Modernization:** When sunsetting legacy systems or moving capabilities to the cloud, RPA helps create a better user experience on the front end while using different systems on the backend.
- **Mergers and Acquisitions:** RPA quickly migrates data to resolve overlapping systems and datasets, enabling platform consolidation and reducing licensing costs.
- **Data Duplication and Reporting (for ongoing data migration):**
  - Many legacy systems cannot support integration and require employees to enter data twice or use a manual migration format, like Excel or CSV. RPA eliminates that duplication.

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**Consumer Goods Manufacturers can Leverage Advanced Analytics to:**

**Explore** current and historical performance

**Explain** trends, root causes and correlations

**Predict** future predictions and foresights

**Prescribe** evidenced-based recommendations to improve future outcomes

**Automate** actions based on learning rules, so simple tasks can be completed without human intervention

- Real-time data relevant to the CRM function can exist in multiple systems. With RPA, this data can be refreshed quickly by clicking a button that launches a bot to retrieve the data from multiple systems.

The RPA software robot (or bot) has a user ID just like a person. The bot typically has a single-business task governed by logic and structured inputs. Its rules do not deviate. It does not learn, but this technique has been successful in streamlining operations and freeing up staff spare time.

RPA can improve data migration by providing:

- **Ease of Use:** Most systems have a graphical user interface (GUI) and can be configured without advanced programming skills. Some systems are starting to apply machine learning, meaning the RPA can learn over time. [AK10]
- **Data Quality Checks:** Most RPA solutions quickly expose inconsistencies in data and can use external data to improve validation. Some even leverage machine learning to make data quality checks better.
- **Traceability:** Data traceability is a concern, so many RPA solutions can produce a log file with a configurable level of detail in various data output types to satisfy data traceability needs.

## Always On Monitoring

This is an algorithm that monitors internal and external data sources, and then applies analytics and machine learning to provide insights around a specific business question.

Today, trends are more dynamic, consumer engagement models constantly evolve, channels are frequently disrupted, and regulatory shifts are common. With always on monitoring, consumer goods manufacturers can keep their finger on the pulse.

As an example, we have helped companies leverage always on monitoring to rapidly identify the difference between complaints and mentions that appear online. When they properly categorize complaints, they can feed the right insights back to product developers to improve future product revisions. So they get smarter insight without expanding headcount.

For one company, we helped to connect structured internal complaint monitoring with unstructured social media sentiment to analyze and assess the inputs received. The always on system continues to monitor activity, process new data, and refine the algorithm it uses to be more exact.

# Getting Started with Advanced Analytics in Consumer Goods

Many companies believe in the value of machine learning and advanced analytics technologies but are intimidated by their perceived complexity and lack clarity on how to get started.

One of the most important pieces of advice we can give is to avoid black-box analytics services. There are many companies who will outsource data science if you provide the data, but the benefits of these services can be limited, and this approach prevents companies from building analytics capabilities in-house.

Here are some leading practices based on our experience helping our clients build and adopt advanced capabilities around predictive analytics, machine learning and artificial intelligence.

1. **Don't be afraid to start with a minimally viable product (MVP)**
   You may need to prove to your leaders that investment can pay off
2. **Start with a Business Problem**
   Identify business needs that can be tied to clear analytical goals
3. **Quantify the Metrics Improvement for the Business Case**
   What does a 1% improvement mean to the business?
4. **Build a Cross-Functional Team**
   Data without domain and system experience is dangerous
5. **Quick Wins are Possible**
   Advanced analytics can sound daunting, but there are ways to build value in the short-term

[1] https://deepmind.com/blog/alphazero-shedding-new-light-grand-games-chess-shogi-and-go/

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# Learn More:

Product Lifecycle Intelligence (PLI)

Advanced Analytics and Machine Learning

What's your view? Add your question or comment

# About the Author



**Rein Singfield**

rein.singfield@kalypso.com

Rein is recognized for delivering high quality, data-driven solutions to solve strategy and process issues across multiple industries with a focus on fast-moving consumer goods.