We live in an age of disruption. Small, nimble organizations are challenging major consumer products players across their brand portfolios, and industry behemoths are struggling to keep pace. Consumer products companies can no longer continue with the status quo; they must evolve and adapt. Organizations who embrace change and innovate are reaping the benefits, those who don’t are losing their foothold with 90% of the top 100 consumer brands losing market share.

How do the other 10% maintain the strength of their market position? By adapting to embrace disruption and stave off would-be competitors through their own evolution. Deloitte Center for the Edge has identified five catalysts that drive disruption: the economy, enabling technology, platforms, consumer mindsets and public policy. When viewed independently, these five catalysts are not new areas of focus for consumer products. In fact, all five were referenced in our industry assessment in Tech Trends 2016: A consumer products perspective—Innovation in the digital era. What has evolved, however, is our perspective on the ways to help future-proof the organization by preparing for and even embracing disruption. One way to do this is to embrace the Kinetic Enterprise.

**Kinetic (adj.)** of or relating to the motion of material bodies and the forces and energy associated therewith. Active. Lively. Dynamic, energizing.

**The Kinetic Enterprise**

The first known use of the word ‘kinetic’ was in 1864: when horse and buggy was the dominant mode of transportation, and branding was nascent, at best, during the ‘production’ era where mass production was rapidly expanding the availability of products and options in the marketplace. This was a time where cultural and technological change brought new challenges and opportunities, creating new products and markets. Given the current state of technological, consumer and cultural change, it is fitting that this word has reemerged to describe the next evolution of business.
The **Kinetic Enterprise** describes companies that are developing the dexterity and vision required not only to overcome operational inertia, but to thrive in a business environment that is, and will remain, in flux. These organizations are not only embracing the multitude of technological and operational changes, but rewriting their very DNA to become more agile, flexible and adaptive.

### The Kinetic Consumer Products Organization

For Consumer Products companies, the definition of the kinetic Enterprise is very much aligned with the speed of Consumer Demand. When opportunities are so dynamic—often with a lifespan as fleeting as a social media trend—CP companies cannot afford to take months to respond. As a result, we are witnessing an active transition from foundational (2-5 years lead time) to flexible capabilities (up to 1 year lead time) and flexible to hype-change capabilities (up to 10 weeks lead time).

To respond to this pace, we view the Kinetic CP Enterprise as a virtual ecosystem of services that extend beyond the walls of the organization. This paradigm shift reimagines the organization not as functional silos and a collection of distinct technology solutions, but rather refocuses on developing the net new capabilities required to be able to orchestrate a collection of services to deliver these functions.

The Kinetic Enterprise perspective allows an organization to access skillsets and technologies and harness brainpower that the organization may not have internally or choose not to maintain as a core competency. The capabilities required to succeed in this environment are flexible, dynamic...and evolving.

### Enabling the Kinetic Enterprise

To enable the kinetic enterprise, consumer products companies will need to build new muscles (while continuing to feed their core), and re-wire the ‘nerves’ that orchestrate movement in those muscles.

- **Build Core Emerging Capabilities**
  - Consumer products companies should develop the ability to orchestrate an ecosystem of players; not just existing external partners and advisors, but new technologies and providers, on-demand talent pools and resources and flexible, shared supply chain networks. These organizations should embrace data agility and analytics that will evolve, adjust and learn. And the kinetic consumer products enterprise should persistently pursue innovation and evolution in the pervasive atmosphere of zero based budgeting.

- **Establish an Ecosystem-driven Infrastructure**
  - In order to nurture and sustain the new ecosystem, the organization should build infrastructure aligned to the new service paradigm. As technology rapidly evolves, the organization should establish clear processes and criteria to support build vs. buy decisions. Delayed adoption and inability to move at the speed of the market at the hand of outdated, burdensome evaluation requirements may cost the organization dearly.

  - Operationalizing the ecosystem should balance speed and sustainability. Speed to market alone will not ferry the organization into the future; successful ecosystem orchestration must ensure compatibility of players and stability of core technology infrastructure.

  - Metrics and incentives will need to be realigned to reflect the ecosystem approach. In the last fifty years corporations were defined by roles, processes and tenure. But now, in the kinetic enterprise, it’s not physical assets and owned resources that matter, but rather the ecosystem as a whole. Tenure no longer reigns supreme, but rather merit and (near-term) impact. It is the realization of meritocracy.

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The only constant is change—and never has that adage rung more true for consumer products than it does now. When the rules of the game are changing, you can’t afford to sit idly on the bench.

To help make sense of it all and to help you build a roadmap to the Kinetic Enterprise, we present Deloitte’s Tech Trends for Consumer Products, an annual in-depth exploration of six trends that are likely to challenge consumer products companies in the next 18–24 months.

From Dark Analytics to a framework for building innovation capabilities to tackle the Exponential Watchlist, these articles embody the spirit of the kinetic enterprise represent key capabilities required for the consumer products industry to embrace and adapt in an environment of disruption.

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Deloitte Consulting LLP Thought Leaders

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Machine learning, cognitive analytics, and robotics process automation (RPA)

Machine learning, cognitive analytics, robotics process automation (RPA), and bots are among the newest wave of advanced analytics capabilities, collectively known as artificial intelligence (AI). These capabilities are being widely leveraged in the consumer goods marketplace to gather consumer insights, optimize inventories, and create offerings for retail customers.

Automating insight development and application via machine learning
These analytics capabilities operate by identifying patterns and commonalities within large input data sets. Over time, as the data set attributes and number of observations increase, machine intelligence capabilities better identify patterns and improve the reliability and predictive quality of their output.

Over time, as the data set attributes and number of observations increase, machine intelligence capabilities better identify patterns and improve the reliability and predictive quality of their output.
Machine intelligence is now being leveraged in nearly every aspect of the consumer products (CP) value chain, from supply chain and assortment to space optimization and consumer engagement.

**Supply chain**

Supply chain performance and decision making rely heavily on forecasted consumer demand. New demand forecasting models, which leverage machine learning techniques, demonstrate improved accuracy while providing forecasts at more granular customer and product levels. CP companies have made investments to create demand signal repositories that incorporate data from multiple sources, including sales, warehouse shipments, store-level performance, and point-of-sale (POS) data from retail partners and syndicated data providers. The incoming data is cleaned, harmonized, and fed into predictive machine intelligence models to create the demand forecast. These robust models contrast sharply against the prevailing simple modeling of historical sales and planned promotional activity.

In the new age of machine learning, algorithms improve over time, “learning” from the data fed through them. This allows companies to capitalize on a broad range of data sources—from weather patterns to social media—to continually refine and improve forecast accuracy and specificity. For example, IBM Watson has been used to incorporate data from multiple sources, including weather stations, social media, and news feeds, to improve the precision of weather predictions. These forecasts can be applied to help both manufacturers and retailers make better supply chain, pricing, and promotion decisions.

Weather data can influence demand and sales forecasting on an annual and ongoing basis. Algorithms to remove the impact of unusual weather activities (such as a late spring snowfall in the South) smooth historical data and improve future forecasts. On a shorter planning horizon, weather data can influence supply chain decisions to ensure that the right products are available in the right areas in advance of trending weather events.

“Out of stock” instances are a common lament among consumer products companies. Simply put, consumers can’t purchase what they can’t find. Especially in times of product promotion, an out-of-stock product represents a lost revenue opportunity in the short run. It can also be a threat to brand loyalty and market share, creating an opportunity for competitors through brand switching when the consumer’s preferred brand (your product) cannot be found in store. While an increased focus on reduced inventory carrying costs incentivizes lean supply chains and inventory management models, demand forecast accuracy is often the root cause of out-of-stock issues. Disjointed retail execution activities further compound these challenges by not providing adequate forward visibility to in-store promotional activity. Coupled with improved sales force communication, machine learning-driven forecasting improvements (and forecast confidence) will reduce out-of-stock risk and ensure that the right product is available in the right store, at the right time.

Another application of machine learning for supply chain capabilities is robotics processing automation (RPA). RPA can be deployed to automate and improve supply chain operations by interacting with existing software applications to perform low- and medium-complexity functions. For supply chain systems requiring the interaction of multiple systems to order and transport products, RPA is a natural fit to help reduce manual error rates and improve speed. Benefits of RPA grow exponentially as the number of systems and functions performed increase.
Replenishment strategy is a crucial capability for consumer products companies, especially those whose businesses involve product with short shelf lives or high inventory velocity. Machine intelligence can be coupled with dynamic routing and computer-assisted ordering (CAO). Dynamic Routing allows for real-time distribution planning, adjusting for product demand, traffic and weather conditions. Computer Assisted Ordering integrates analytics and forecasting to recommend order quantities, reducing human error and more closely aligning actual orders with forecasted demand. In combination, dynamic routing and CAO put the right product, in the right quantity, at the right place at the right time.

Assortment and space optimization
While “endless scroll” eases the space constraints of a traditional brick-and-mortar store and planograms, assortment optimization remains highly relevant. Even in a virtual, e-tailing world, where physical space no longer defines the boundaries and varietal limitations of a given category, good category management and assortment management principles apply.

Machine intelligence can inform better organizational decision making in the areas of assortment and space optimization with increasing levels of granularity and specificity by marrying store-level POS or sales data and socio-demographic data of the store location. This can also drive continuous improvement of store clusters and assortment refinement.

Smart space allocation leverages machine learning to analyze planograms across multiple dimensions simultaneously—number of product facings, shelf depth, product sales history—to determine the optimal space allocation by brand, sub brand, product and pack size. While static modeling is nothing new in this arena, the use of self-refining predictive algorithms, which are driven by machine learning to continuously refine their own predictive powers, represents a significant opportunity to improve financial value through flexible, adaptive models which keep pace with changing market conditions.

An assortment optimization tool leveraging predictive analytics was recently piloted in department store chains. The assortment optimization algorithm identified store locations with potential high demand for certain products. This algorithm, powered by machine learning, uncovered latent customer demand that traditional clustering or segmentation techniques may not have recognized. These models also identified correlations in purchasing behavior across products and categories. For example, 4 percent sales lift in high-end dresses was accompanied a 46 percent increase in sales of more moderately priced dresses. Over the six-month pilot period, acting upon the identified opportunities by the algorithm yielded an incremental 6.65 percent increase in revenue and a pilot store sales 7% higher than similar stores in the region.

While space allocation may be considered a traditional retail activity, consumer products companies can leverage these principles in retailer category advisor roles. These methodologies can also help drive hyper-localization in promotions and store-level assortment recommendations.
Consumer engagement
Marketing and digital marketing functions have been at the forefront of adoption for machine intelligence capabilities in many CP organizations. Digital marketing platforms and dynamic ad and pricing algorithms have brought science to the “art” of consumer engagement.

Printed, on-size-fits-all weekly circular ads and static consumer pricing and promotions will likely be replaced by personalized digital coupons and next-generation technologies such as electronic shelf labels. These technological advances and new methods of consumer engagement allow for hyper-personalization and dynamic pricing in ways that were not possible even a few years ago. Digital and mobile influence across the consumer shopping journey continue to grow double digits year over year. The marketing function is being transformed and armed by digital innovation and data, and this environment is ripe for machine learning applications.

L’Oréal Makeup Genius, an app that allows users to see themselves applying cosmetics in real time by overlaying products onto their faces, lets consumers to virtually try on different products and looks. This application succeeds by combining augmented reality, and advanced machine learning algorithms portray the selected cosmetic application onto the user’s face. The cumulative effect of these technologies is an interactive and engaging virtual product interaction. In-app purchases and “find in store” capabilities represent a new and novel way for consumers to bridge the gap from product research to acquisition.

In another application of machine learning, PepsiCo is using Pongr’s AI technology to connect with consumers in stores. Consumers can use their cell phones to photograph The X-Factor and Pepsi logos together. Then they can send these photos to an email specified by Pepsi. Pongr’s direct-response platform filters the correct entries and instantly sends consumers links to special digital content from the FOX reality show, such as Pepsi-exclusive videos of contestants and behind-the-scenes scoops.

The ability to “learn” from the interactions with consumers across digital and traditional touchpoints is changing how new products are introduced and evaluated, how products and quantities delivered to each store, and the types of offers that are delivered to consumers in store and through digital technologies. The learning loop not only includes findings from historical activity and consumer response but also focuses on constantly seeking “white space”, or the identification of new opportunities. This involves rendering untested content in an intelligent fashion to a select audience to constantly test the market.

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Where do you start?
For consumer goods leaders, determining where to deploy machine intelligence is a common challenge. To identify the highest value opportunities for your organization to embrace machine learning, CP leaders should perform a quick assessment of current capabilities:

- **Identify opportunities where improved data accuracy can drive value:** Plagued by constant out of stocks and lack of demand forecasting trust from the retail sales force? An investment in machine learning to refine demand forecasting may drive value by reducing inventory carrying costs and capitalizing on incremental in-store selling opportunities.

- **Identify areas where existing and easily accessible data sources are being underused:** Business processes that leverage large data sets and multiple data sources are likely to be optimal use cases for machine learning. Large data sets are prime for machine learning as they help improve the performance of the algorithms.

- **Build talent and tools with analytics in mind:** The talent required to execute machine analytics models, draw insights from the capability, and continuously tune and improve this capability is scarce. To develop an advanced machine learning capability, companies should purposefully invest in people and tools. Without strong leadership and investment in training, the organization can’t fully succeed.

- **Consider customer and consumer privacy when selecting data sources:** Privacy concerns weigh heavily on the application of artificial intelligence. Organizations should thoughtfully design opt-in programs to collect data with consumer permission and apply insights in ways that are sensitive to consumer privacy concerns.
The bottom line
Machine learning and RPA can be leveraged for many consumer goods applications that require insights beyond those delivered by traditional analytics techniques. Building machine learning and artificial intelligence capabilities in house may appear challenging, but the value delivered by deploying these methodologies to high-impact business issues warrants adoption and investment. Because machine learning methodologies adapt over time to better draw insights, the value delivered by an AI or machine learning use case will continue to grow and improve over time.

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