

WHITE PAPER

Un-Disrupting Retail



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The Extraordinary size of Amazon

Think of Amazon as a computer company with warehouses. Today it employs more than **20,000** software engineers and owns more than **30,000** intelligent Kiva robots.

Aside from being the largest online retailer, it also owns **AWS**, the largest cloud- computing system. The company also sells **Alexa**, the world's most popular artificial intelligence product, enabling its algorithms to begin conversing with its customers. Amazon is focused on computing its way to success, rather than marketing to success.

America's retailers are fighting a three-front war. Amazon is mounting a full- frontal assault, e-commerce is rapidly shifting consumer allegiances and loyalties, and fast-fashion is blowing up the 14-week catalog cycle. Nearly every business newspaper and magazine refers to this era as the retail apocalypse.

Is the press right? Will Amazon achieve complete domination of the market? We've watched industries like newspapers, travel, and personal computers be disrupted to failure, raising the question of inevitability for America's retailers. PreciseTarget believes there's still daylight for retail, although the window is closing at an accelerating rate.

Amazon has shifted the retail battleground, away from customer service and personal client relationships to algorithms and personalization. The vast majority, perhaps 99%, of Amazon's 100 million Prime customers have never spoken to a person at Amazon. Customers view their relationships with Amazon as transactional, rather than human. We're reminded of the failed attempts of travel agents to hang onto customers when booking activity rapidly shifted to online booking and real-time price comparison.

Amazon's Bet: The Algorithmic Relationship

Amazon has shifted the battleground away from human-to-human relationships to a battle for data superiority. In the new retail war, the incumbents are still fighting with guns and knives, while Amazon fights with cyberwarfare. More than 40% of Amazon's sales come from algorithmic recommendations. They're building automated factories filled with intelligent robots, and they're coding sophisticated computational models that consider what you wear, watch, read, and eat. Can you make correlations between the groceries someone buys and the clothing brands that are appealing? We're about to find out.

Can Retailers Win in the HAL Era?

There was a time when we imagined a gigantic, super-smart, artificial intelligence (AI) computer taking over the world. In reality, there's a little AI being added to nearly every technology experience. Our cars now think about avoiding accidents, products like Alexa, Siri, and Google Home answer our verbal questions, Spotify and Pandora decide our next song, and Netflix's AI engine is busy making decisions about the best shows and movies for our families. Rather than viewing this automated help as an intrusion, we've learned to expect cognitive assistance from technology. We're learning to hate dumb computers.

In high-tech, we talk about enabling technologies, which are the breakthrough innovations that enable major market shifts. The two key enablers of AI are the exponential decline in the cost of storing data, and the on-demand availability of computing power in the cloud. In 1981, you had to pay \$500,000 to purchase a one gigabyte hard drive, which now costs less than 50 cents. AI engines are data carnivores, and it now costs one million times less to store massive amounts of data. Similarly, the cloud has ushered in "elastic computing" resources, which simply means you can rapidly throw computing power at a problem.

We asked the PreciseTarget engineering team on the time it would take to increase our power from one server working on a problem to 10,000 servers, and they proudly told us it would take them less than five minutes to pull that virtual server farm together.

Two Difficult Problems

While the computer scientists have solved the computing cost problem, retailers face two difficult problems preventing them from playing in the algorithmic relationship world:

Sparse Data Problem

The largest apparel retailer in America sells nearly \$25 billion per year in apparel and footwear. While an impressive revenue amount, this retailer averages two items per year, per customer. It's odd to say they're lucky, until you consider that most retailers average less than one item per customer per year. In contrast, Amazon averages more than 100 sold items per year per Prime customer. The data science community is unanimous: sparse data is greatest challenge facing America's retailers.

Personalization algorithms are designed to cluster people with similar purchase histories in an effort to accurately recommend the next item based on the collective actions of the cluster. Amazon's dense data allows them to achieve nearly 40% of their sales by recommending the right product. In contrast, the largest apparel retailer we mentioned achieves less than 2% of sales from recommendations. Simply put, their data is too sparse.

Cold Start Problem

We refer to the second most difficult challenge for a recommendation engine as the cold start problem. This simply means the machine can't start making predictions until it has a corpus of prior transaction data from which to learn. You've heard the term, "machine learning," and imagine a bake-off between a computer that learns from hundreds of your transactions, and a machine trying to learn from the one item you bought at a retailer. It's bad enough that today's retailers have very sparse data histories on customers, and it's exacerbated by the rapid velocity of change related to seasonal apparel catalogs. Imagine having a super smart engine that over time learned to recommend your winter catalog products – suddenly becoming "dumb" because you released your new spring catalog with completely new products.

We're Entering the Programmatic Personalization Era

PreciseTarget has been working with the largest American retailers to combine their data into a new intelligence corpus. We solved the sparse data problem, and have overcome the cold-start problem with innovative data science. We created an engine that de-identifies the retailer's customers, eliminating all risk that their data can be shared with a competitor.

Retailers have trusted us with over five billion taste events, and we've profiled nearly 400 million consumer identities. The taste platform associates consumer taste events to randomized synthetic consumer identities. The synthetic identities were created by our match partners, the only parties with a matching key to the actual consumer. The matching key is not algorithmic, meaning there is no ability to decrypt the matching key. All incoming data must be funneled through a partner match center. The partner provides a service to transform the provided data to a taste event prior to the data being provided to PreciseTarget.

Our most recent performance data shows conversion improvement of more than 100%, although we're just getting started. We believe our machine learning algorithms are well on their way to helping our retail customers double in-store and online conversions. Our mission is to help American's retailers play in the new cyberwarfare game, both online and in store.



About PreciseTarget

PreciseTarget is a retail data company focused on helping retailers drive higher conversion by using our innovative Taste Graph. The company has profiled the product tastes of over 200 million U.S. adults in the largest retail categories, including apparel, footwear, cosmetics, home goods, and electronics. Our customers have trusted us with over 5 billion SKU-level transactions, and more than 200 major retailers provide us with daily data feeds. Retailers, agencies, and ad-tech companies use our audiences and customer profile data for e-commerce, in-store, and customer insight applications. To learn more, please contact us at Sales@PreciseTarget.com.

Our Founder

Our team is led by Rob McGovern, an experienced entrepreneur who founded Careerbuilder.com. He has previously served in executive positions at Hewlett Packard and Legent Corporations, and has held many board directorships at private and public companies. He's a graduate of the Smith School of Business at the University of Maryland, and in his free time is a cyclist, airplane pilot, and mentor to young entrepreneurs.