A Strategist's Guide to the Digital Grocery

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Sometimes industries hit a tipping point. It looks like nothing is happening for a long time, while forces of change build up, and then everything shifts at once. That is happening in the grocery industry now. A shift is taking place in the most fundamental form of shopping: consumers' purchases of food products and other basic household goods. The most visible signal of this shift occurred in June, when Amazon announced its acquisition of the Whole Foods grocery chain, but the basic trajectory was already long under way.

Central to this shift is the new digital grocery platform rapidly emerging in industrialized countries. In the U.S., Walmart and Amazon are each leveraging their scale advantages, but under different paradigms. Walmart has achieved unparalleled success with a "push" model that ships full truckloads of goods to more than 4,000 Walmart stores across the country, offering "everyday low prices," as the slogan puts it, without sales or promotions. Amazon operates a similarly powerful supply chain but with a "pull" model that responds directly to customer demand by shipping packages rather than pallets of goods. The rest of the nation's supermarkets and grocers must find a way to compete in this environment. Other industrialized countries have similar dynamics: traditional grocery competitors are squeezed between a "push" leader like Walmart and a digital native "pull" player like Amazon or Alibaba.

Undoubtedly, the new competitive dynamics will give consumers many more options for pickup and delivery of basic household goods, at lower cost and with far more convenience than they have ever had before. But they come at the expense of the traditional supermarket. For more than 50 years, convenience, largely defined by store location, has been the dominant factor in grocery retail. It has allowed even small players to survive, and thus helped create a fragmented sector. But now, the digital reframing of the grocery business, encompassing the entire purchase experience from order placement to delivery, reverses that reality. Conventional supermarket companies face an existential threat and must change their business models to compete and, ultimately, to survive.

One potential approach shows particular promise. It could be called the "ply" model — as in, "ply your wares with digital technology." This model seeks to offset the scale advantages of Amazon and Walmart by leveraging the distinctive capabilities of a local grocery store: a supply chain fed by full-truckload shipments (which Amazon lacks); dynamic pricing and promotion (which Walmart disdains); and the ability to command intensive loyalty from shoppers, because of its local community knowledge, customer segmentation, and product customization. To compete in the coming de-

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cade against the twin disruptions of Amazon and Walmart (and their equivalents), today's grocers and supermarkets need to return to the customer-centric mind-set of their 19th-century predecessors, while making the most of today's digital tools.

A near-future scenario might involve a suburban family of two adults and three children. They are mindful of both price and convenience. Their favorite neighborhood grocer continues to win their loyalty because it understands what they are looking for; it regularly stocks its shelves with new items likely to appeal to them. On a Tuesday evening, the store sends the oldest child, a 15-year-old being driven home from a soccer game, a text saying his favorite box of prepared food, suitable for a low-cost and healthy school lunch, is half-price in the store they are driving past. Moreover, other items the family regularly purchases, including a new flavor of their favorite breakfast cereal, their usual laundry detergent (which they haven't purchased in a few weeks), and a bag of oranges, can be boxed together for them along with a few surprises that the grocery store will "throw in just to see if you like them."

The teenager receives the message because the store's algorithm, after years of data analysis and machine learning, recognizes that the parent is probably driving and thus cannot text. Meanwhile, the other family members waiting at home have also received the offer and have clicked a box to indicate their support. The teenager alerts the driver to all this, and they stop at the store. As the teenager steps out to pick up the package at curbside, a store employee offers some cold sports drinks as additions to the boxed order. No payment is required right then; the cost is added to the family's monthly tab.

What the family members don't know is that the pricing on those items reflected economics put in place by the grocery chain for their mutual benefit. The school lunch promotion resulted from a special deal with a consumer packaged goods (CPG) manufacturer, interested in pushing out particular products in that local market. Neither Amazon nor Walmart would have matched that deal, because their approaches don't favor the same kind of supplier relationships. The grocery chain's inventory-monitoring algorithms had noted an oversupply of fresh oranges in the store, and its customer profile data noted the family history of purchases, suggesting a win-win opportunity. The store did not discount the laundry detergent since its algorithms noted the brand loyalty; it reserved those trade promotion dollars for a different customer. The cold sports drinks offered at pickup were among the higher-margin items in the store, normally bought on impulse in the checkout line, but explicitly recommended because the algorithm recognized the family as participants in previous soccer league promotions. The retailer was plying its wares: matching its preselected assortments to the customers most interested in them, with offers designed to be irresistible — and profitable.

Many established grocery chains will not gladly accept the dramatic changes involved in this new business model, but some new approach is urgently needed. A study published in 2016 by the Food Marketing Institute noted that as recently as 2007, 67 percent of shoppers chose a supermarket as their primary source for groceries. Nine years later, that number was down to 49 percent. And it's almost certainly continuing to fall, eroded not just by online shopping, but by the increasing proportion of purchases made at supercenters such

as Walmart (picked as the primary source by 23 percent of shoppers), club stores such as Costco (11 percent), and drugstores (5 percent). E-commerce will continue to gain market share, especially with Amazon's and Walmart's increasing focus on selling fresh food. Profitability and top-line growth are rapidly fading for conventional supermarkets; so are shareholder returns. Overcapacity in the grocery industry is growing, with too many facilities holding too much in inventory. Consumers are getting savvier in using multiple formats (different store types, online subscription models, online bulk orders, meal kits) and using their smartphones to compare prices. And the global expansion of discounters from Germany (Aldi, Lidl) and China (Bailian) may lead to even greater competitive pressure in the U.S., U.K., and elsewhere.

For now, these changes will continue to be felt most strongly in what grocers call the "center of the store": the aisles of mass-market pantry and household staples such as breakfast cereal, canned goods, cleaning products, and frozen foods. Most incumbent supermarkets have responded to industry changes by strengthening the periphery: prepared food, wine, artisanal cheese, locally baked bread, and organic produce. That helps in the short run — assuming the store can attract shoppers interested in more expensive, fresh products — but fails to address the fact that the store center has been critical to supermarket business models. With the decline of shoppers' high-volume "stock-up" trips, the central aisles will be more like ghost towns, and this will bring a new round of stress to margins and profitability.

Some traditional grocery chains will respond by pressuring their core suppliers, the consumer packaged goods companies, to lower prices further. They might also try to squeeze more items into the center of the store in hopes of competing on variety. But they will have better success in collaborating with CPG companies to achieve a unique capability in digital grocery. The ply-your-wares concept could give them that capability.

Ply to Push to Pull to Ply

To understand the challenge of the digital grocery disruption, you have to look back at history. Today's transition is one of three great shifts in grocery industry business models since the Industrial Revolution. In the 19th century and several decades of the 20th, most grocers used an over-the-counter approach. A merchant interacted with each customer, bringing forward the requested household staples from a narrow selection of options kept in the stockroom. A shopper had to visit several shops — which might include a butcher, baker, greengrocer, and packaged-goods store — to fully stock the household pantry.

Then came the supermarket, pioneered by King Kullen in New York in the 1930s. Combining a broad array of products in a large, self-service format, it seemed at first like a retail miracle. During the next 40 years, supermarket chains built ever-larger outlets with a discount push approach: "stack it high and sell it cheap." Simultaneously, consumer goods manufacturers built national and then global brands. Together, the manufacturers and retailers created vast supply chains to capture economies of scale, coupled with price promotions designed to push products heavily. Large trucks delivered pallets to crowded backrooms; weekly sales flyers attracted customers into the stores to empty the shelves, using discounts that manufacturers generally funded. Today's trade promotion practices, which have grown to generate up to 25 percent of a typical manufacturer's gross sales, are descended from the coupons and flyers of the past.

In the 1980s, the next great shift occurred, with Walmart's entry into grocery categories. Walmart, founded in 1962, had achieved US$1 billion in sales by 1980, just 10 years after going public: This was faster growth than any company, in any industry, had previously achieved. It continued to grow through its steady push approach: eschewing discounts, building large stores with varied selections, targeting underserved locations (especially in rural areas), and maintaining stability through its low prices. This removed the bullwhip-like vicissitudes of discount pricing and the excess costs of the traditional supermarket. The company shipped goods in full truckloads, just like its rivals — but it achieved a steadier flow and enormous scale, which kept supplier plants and retail stores running at full capacity.

Grocery now accounts for more than half of Walmart's U.S. sales, making the company the largest purveyor of groceries in the world. Even Walmart engages in some temporal discounting, but it tends to use trade promotion dollars from manufacturers to fund its everyday low prices, setting a calendar of very limited weekly promotions. Some of its key suppliers, including Procter & Gamble, have adjusted their practices to accommodate the steady push approach. By any standard, the approach is successful: In the fiscal year ending Jan. 31, 2017, according to the data Walmart releases, its revenues totaled $487 billion from more than 11,500 stores in 28 countries.

But the power of a steady push system wasn't enough to prevent a third paradigm shift. This was the digital pull system, made possible by the Internet and supersized by the smartphone. In a pull system, customers identify what they want and the system delivers it on demand. To make smaller orders profitable, the supply chain has to be restructured. The pathbreaking digital pull pioneer, of course, was Amazon, whose skill at user experience and operational excellence has made it the only general retailer adept at this approach. (Some pull purveyors have succeeded in specific categories, such as Inditex/Zara in apparel.) Amazon developed its remarkable pull-based supply chain by borrowing lean management techniques from the Toyota production system (TPS). Coincidentally, Taiichi Ohno, the father of TPS, drew some of his original inspiration from a visit to an American supermarket in the 1950s.

After the crash of the Internet bubble in 2000, Amazon continually kept costs low, sacrificing delivery time by centralizing its facilities in Kentucky. At that time, its guaranteed delivery time frame was a range of two to five days. But the company kept investing heavily in its distribution network, always seeking to increase speed and precision. Today, after an order is placed, the site displays a countdown clock indicating how many minutes until the product ships. In fiscal year 2016, Amazon revenues totaled $136 billion, which equates to just 28 percent of Walmart's revenues. But Amazon is growing faster; in 2016 it captured one-fourth of the total growth of all U.S. retail, half of all online growth, and the fastest share price growth in the global economy.

Amazon's entry into the grocery sector can be traced to 2005, when it introduced Amazon Prime, a service guaranteeing free two-day delivery of selected products for members who paid an annual fee. Currently, 40 million of the 400 million items sold on the Amazon online platform qualify for Prime shipping. A more explicit food business began in Seattle in 2007 with AmazonFresh, which now offers 500,000 perishable and nonperishable products. In 2014, Amazon launched Prime Pantry, offering tens of thousands of grocery items for two-day delivery to doors anywhere in the U.S. for a $6 fee. The last barrier has been fresh and frozen foods. Amazon has struggled to master the "cold chain" required to handle refrigerated groceries: It took six years of experimentation before AmazonFresh expanded to other locations in 2013. It is now available in many major U.S. metropolitan areas (Atlanta, Boston, Chicago, Houston, Los Angeles, Philadelphia, San Francisco, and Washington, D.C., among them) and London.

In March 2017, two AmazonFresh pickup locations in Seattle began offering curbside service, placing groceries in customers' cars at a time specified when the online order was placed. Thanks to Amazon's small-batch delivery capability, the Fresh pickup sites are no more than one-fourth the size of a typical grocery store carrying the same variety. Another retail experiment is a small-store format called Amazon Go, which has adopted the type of sensor technology and artificial intelligence used in self-driving cars to eliminate cashiers and checkout lines; the building is designed to track purchases as customers walk around. The prototype stores will be about 1,800 square feet, and carry only 500 to 1,000 items, most of which will be freshly produced on demand (applying the pull approach) by a dozen or more on-site food preparers. And of course, with the purchase of Whole Foods, the company now has a viable presence in communities throughout the U.S. (and a few outposts in Canada and the U.K.), providing a platform for further experiments. Meanwhile, on the supply chain side, the company has announced plans that include adding 48 new distribution facilities

worldwide to its existing 380, about 230 of which are in the U.S., building upon a current global total of 139 million square feet — plus its own air hub in northern Kentucky to house 40 leased air-freight Boeing 767-300s. These numbers represent such a high competitive bar that no single retailer, and certainly no supermarket, can feasibly match Amazon's pull approach.

Walmart, meanwhile, is acquiring online retailers (notably Jet.com in 2016 for $3.3 billion and the men's apparel outlet Bonobos in June 2017 for $310 million), and offering its own online-order-and-store-pickup services called "Click & Collect" and "Pickup Today." Collectively, the two behemoths — along with a group of smaller startups — are shifting consumer expectations about ordering food online. The perception of food shopping convenience is changing from an open checkout lane to a smartphone app with a frictionless user interface. Even a small shift in customer attitudes can disrupt traditional supermarkets. Unless traditional grocery stores respond aggressively, Walmart, with its push model, and Amazon, with its pull, could plausibly divide most of the grocery category between them — a category that represents roughly half of retail sales.

Introducing the Ply Model

How, then, can traditional grocers respond to these threats? They don't have the scale to match Walmart's steady push or Amazon's digital pull. But they do have advantages that Walmart and Amazon can't match: their supply chains, dynamic pricing and promotion, and customer loyalty. Digital technology can and probably will be used to increase the value of these advantages. On the supply chain side, new entrants are already setting themselves up as platforms that established retailers can deploy. These include Instacart, a $3.4 billion startup partly owned by Whole Foods, which has tried to explicitly compete with Amazon on grocery delivery; other delivery startups such as Postmates, Shipt, Store-Power, and GrubMarket; Google's version (known as Google Shopping); and a growing number of food preparation startups, such as Blue Apron and Sun Basket. To be sure, the costs of home delivery (the "last mile") are still as great as they were when one of the first such startups, Webvan, failed in 2001. And the initial partnerships between these new companies and traditional retailers have primarily been "no regrets" experiments, largely funded by the startups and offering little risk to the incumbents. Home delivery will need to be a more integral part of digital grocery strategies in the future.

In customer relationships and promotion, digital technology will be critical for enabling the ply-your-wares approach. A food retailer will now use mobile devices, customer segmentation, and pricing to change the promotion game entirely. This new paradigm is, at its core, a digital upgrade of the earliest retail model. In medieval village marketplaces, merchants aggressively hawked their products and haggled over prices, using a keen eye to assess each customer's willingness to pay. They also kept watch for regulars who could be counted on to show up every week. At the end of the market day, savvy merchants had fully depleted the inventory of goods — be it fresh meat cuts or fur hats — that they had already purchased.

A digital ply model gives consumers something they can't get from a scale-based model: tailored offers based on historical in-store shopping patterns and micro-segmentation derived from big data. The family being targeted by a digital message is not just segmented, but analyzed for its needs and wants, almost down to an individual level. The supermarket no longer tries to compete with Amazon or Walmart by providing everything; instead, it provides what it perceives its customers will want and need most. Sometimes this will be fresh or precooked food; other times, just the right assortment of staple goods. Sometimes, the supermarket offers rare items that a few key customers have bought in the past, and that happen to be available now.

The most important technological enabler for this new format is real-time, big data software that maximizes the return on the investment in store-based inventory. Under the digital ply model, retailers and their brand partners manage product promotions the way airlines manage airplane seats. The most loyal customers don't get the lowest prices, but they get priorities and special perks. When the supply of inventory is sparse, it is set aside for loyal customers. When abundant inventory needs to be sold, selective promotions target the price-sensitive customer who would not purchase otherwise. The retailer models the economics of customer purchases — including the likely impulse purchases made by customers drawn into the store through promotions — and adjusts the assortment and pricing accordingly.

Some companies are already applying elements of this approach, using technologies emerging now. One forerunner is the Safeway chain "Just for U" app that identifies individual tastes and directs consumers accordingly. Another is the Denver-based analytics firm

FullContact, founded in 2010, which helps companies combine their customer information with data from platforms such as Twitter and Facebook. Ply marketing isn't easy, and it won't solve all problems. But those who embrace it could find that it allows them to survive the coming battle between Amazon and Walmart.

Getting to the Digital Grocery

Whether they adopt the digital ply-your-wares paradigm or another framework, supermarkets will end up shifting their operating models dramatically during the next few years. There is no other way to counter the loss of business to Amazon, Walmart, and a few other multichannel platform creators. Collaboration among grocery manufacturers and retailers probably represents the best way to begin. Both sectors are threatened by the same industry dynamics. They are both aware of the power of the Internet, and particularly mobile devices, to reach consumers on the move. Together, they can reach out to loyal customers, alert them to opportunities at stores near their locations, and attract spur-of-the-moment purchases that offer real value and yield incremental revenue.

Unfortunately, the apps from traditional retailers are not yet up to the challenge. According to a recent analysis by the business intelligence research firm L2, only one of 15 grocer apps and five of 10 general retailer apps provided information on individual stores' inventory, a critical functionality for purveyors of groceries. Today's grocers, like the village merchants of the pre-industrial era, need to focus on selling their inventory at the highest margins possible. But all too often, that inventory is put on sale across the board, independent of the store's current portfolio of goods. At times, the products advertised in a traditional push promotion are out of stock at some stores, because the space allocated to the inventory was insufficient to cover the increased demand. So rather than finding a great bargain, the consumer is frustrated by an empty shelf — particularly maddening to stores if the consumer was a loyal shopper who would gladly have paid full price. Out-of-stocks, whether on promotions or not, represent a failure for the store, the brand, and the consumer.

Admittedly, maintaining an accurate view of inventory is far more challenging in a grocery store than in an e-commerce fulfillment center of the sort that Amazon runs. The fulfillment center operates in a highly controlled environment, using best practices such as "cycle counting" (an auditing practice in which part of the inventory is counted on a particular day) as well as draconian measures such as pat-downs of every employee exiting the facility. In a grocery store, when the computer shows an item in stock but the shelf is empty, it could be in the back room, in a shopping cart awaiting restocking, or in another consumer's hand in the checkout line.

Digital grocers will use big data to address this problem. It can help stores improve inventory accuracy by noting sales patterns — such as a significant drop in sales when an item is out of stock — in order to trigger a targeted inventory count to address the issue. Loyal customers could help by clicking a button on their mobile app if they don't find a desired product on the shelf. The signal alerts the store manager, who might intervene on the spot and find a substitute, suggested by the algorithm, perhaps with a discount to keep a loyal customer, or a promise to deliver the item the following day. Customer data can also identify habitual purchases, say, the largest package size of a favorite cookie brand, and offer two-for-one promotions to specific customers when there is too much of the product in inventory.

Few things are certain about the future of traditional grocers in the digital world, except that decline awaits those who sit back and do nothing. But supermarkets should take heart — loyalty to grocery store chains sometimes scores higher than loyalty in any other retail category. The shoppers are supermarkets' to lose. It's time for grocers to stop thinking about the coming threat, and start planning for the opportunity. ✛

Resources

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