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BY TIM LASETER, MATT EGOL, AND SCOTT BAUER



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Nearly two decades ago, just as e-commerce was taking off, a group of players emerged to claim their share of the home-delivery market. Remember Webvan, Urbanfetch, Kozmo, and HomeGrocer? In 2000, in this magazine, we analyzed these and several other startups and found they faced insurmountable hurdles. Limited online sales, high delivery costs, entrenched competitors, and an unacceptable trade-off between speed and variety would combine to doom many of the early home-delivery companies (we called it “the last mile to nowhere”). And in fact, most flamed out in spectacular fashion.

Many of the same challenges persist today, often with added com-

plexities. By 2014, Internet sales in the U.S. had reached US\$300 billion, an impressive growth rate averaging 18 percent for 15 years. Yet e-commerce accounts for just 7 percent of total U.S. retail sales — the physical store is still alive and well. Delivery costs continue to be driven by variable labor costs, delivery density, and average order size. The established competitors (UPS, FedEx, and the U.S. Postal Service) have become increasingly dependent on e-commerce to replace the business lost from the digitization of letters and other documents. And their position has been further complicated by companies that use crowdsourced delivery models.

But the most important change since our earlier analysis has been the evolution of the trade-off between speed and variety. In the late

1990s and early 2000s, home-delivery startups focused on speed at the expense of variety: They could get you a small selection of goods relatively quickly. Today, when retailers approach the last mile, they make more nuanced trade-offs among speed, variety, and convenience. The right combination entails a complex set of compromises that depend on the product type, consumer segment, shopping occasion, and retailer positioning.

That said, the fundamental economics of the last mile haven't changed. Companies have to offer a solution with costs equal to or lower than the customer's willingness to pay (the “cost to serve”). It's easy to delight customers with a free offering, and it's not hard to cover your cost by charging a high premium. But finding the sweet spot that resonates with consumers and drives sales growth proves far more difficult. If retailers can get that right — admittedly, a big challenge thus far — they can make the last mile a competitive advantage.

To help companies better understand these complexities, we conducted a bottom-up analysis of the cost-to-serve for an array of retail models, including traditional store-based sales, curbside pickup, crowdsourced shoppers, “white glove” delivery, and pure-play e-commerce. We also surveyed 2,000 online U.S. shoppers to determine their willingness to pay for each of those last-mile options for a variety of goods purchased online. The results revealed some of the winning approaches in categories such as groceries, durable goods, and apparel.

Grocery Moves Online

Until recently, the math for home delivery of groceries by brick-and-

mortar stores didn't seem to add up. The cost of typical items — for example, a can of soup — is on average far less than the cost of items in categories such as consumer electronics, or even books. As a result, the pick-and-pack costs (that is, the cost of an employee pulling an item off a shelf and putting it into a box) run disproportionately higher for groceries than for other categories. Groceries are also heavy and bulky, which makes shipping expensive. But recently, new models have emerged that are changing the calculus.

For our analysis, we measured the cost-to-serve across a range of options for a sample basket of 23 grocery staples totaling \$100. For the traditional retail experience — in which the shopper travels to the store, pushes a cart around, and then drives it all home — the cost-to-serve totaled \$21. Overhead and labor to manage the physical store accounted for the bulk of the cost (more than \$19), and the remainder was attributable to shipping truckloads of goods from a regional distribution center to the store.

For click-and-collect models — in which customers order in advance items they will pick up themselves later — the cost-to-serve jumped to \$32. The additional store employee labor to pick items from shelves adds roughly \$10, which the customer needs to pay or the grocer needs to absorb into its razor-thin margins. This analysis assumes store employees have no free time for picking orders and that fixed costs in the store cannot be eliminated easily. But even on a marginal cost basis, stores face the question of whether the sales represent incremental revenue or mere cannibalization.

The cheapest option eliminates the retail store entirely. In a pure-play

e-commerce model, the customer orders online, professional pickers assemble orders from a dedicated fulfillment center designed for operational efficiency, and the order gets shipped to the customer's home via two-day ground shipping by UPS or FedEx. Total cost-to-serve for \$100 worth of groceries? Just \$19, which is lower than putting the goods out on the shelves of a physical store. As this model expands, grocers will see sales of many goods that make up the “center of the store”— shelf-stable items such as cereal and pasta — move online.

Such a shift would have huge implications for the grocery category, particularly among established grocery chains, which compete primarily on price and the convenient locations of their stores. Most of the store labor costs stem from customer service for the perishable items around the edges of the store — produce, meat, fish, and dairy (for

Amazon Prime (who pay an annual \$99 membership fee) pay a flat fee of \$5.99 per box for ground shipping, and the items typically arrive within four business days. Each box can hold 45 pounds or four cubic feet of items — of which several thousand are available, enabling customers to put large or bulk purchases in the box and still take advantage of the flat shipping fee.

Walmart is experimenting with a different online model. Rather than only shipping products to a customer's home, the company is testing a click-and-collect model that features same-day, curbside pickup at a mini-fulfillment center located on a convenient commuting route or co-located at a supercenter. Similar to Prime Pantry, the Walmart offering includes several thousand items, but unlike Prime Pantry, it extends to perishable items such as bananas — which would not fare well traveling two days on a

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example, cheese). The self-service, “center-store” staples contribute incremental margin with little cost. But if those goods move online, the total store cost must be spread over a smaller revenue base, creating potentially unsustainable economics. The old “pile it high and sell it cheap” strategy will not work when a pure-play Internet retailer can offer the convenience of online shipping, home delivery, and lower prices.

For example, Amazon's Prime Pantry presents a significant threat to the center store. Members of

UPS truck. Walmart's model is not only faster than Prime Pantry but also cheaper, because there's no per-box shipping fee.

Yet another model cuts out the retailer entirely. For bulky, cumbersome items that consumers go through at a predictable pace, a brand-loyal customer seeking regular replenishment cares little about the shipping lead time as long as the new order arrives before the last one runs out. Take Purina's online offering of Just Right pet food. Consumers can create a custom blend of dog

food unique to their pet and subscribe for auto-replenishment shipments directly to their home. For manufacturers of many product categories, it could be more profitable to sell directly to consumers online than to distribute products to the store shelves of a grocer — provided that the average order size is big enough to justify free shipping. And branded-products companies tend to be skilled at offering personalized content to complement the physical delivery experience.

“White Glove” for Durables

Durable goods, particularly furniture and household electronics, are often heavy and complicated to

the trade-offs that consumers make among competing variables such as speed and cost. Our analysis found that for large, expensive products such as TVs or furniture, customers value predictable convenience more than speed. For example, consumers had no problem waiting two days for so-called white-glove service — having a store employee deliver the TV, take it out of the box, and set it up. Furthermore, our respondents found the white-glove service option much more attractive than standard e-commerce. And customers indicated a relatively high willingness to pay for such service. For example, on average consumers would consider a \$62 fee to deliver a \$1,000 piece of

the item home. Best Buy responded to this showrooming trend by price matching, which has minimized lost sales but also squeezed margins.

An alternative approach would be to embrace the showrooming phenomenon, which Restoration Hardware is now doing. Between 2009 and 2012, Restoration Hardware scaled back the number of its retail stores by 25 percent by closing smaller locations in malls (typically less than 10,000 square feet). Then, starting in 2012, it opened new locations in much larger spaces, ranging up to 55,000 square feet spread over multiple stories, often in renovated historic buildings. Rather than the old model of a small, cluttered mall store stuffed with knickknacks arranged for self-service shoppers, the new “galleries” display the company’s products in room-like settings.

Simultaneously, Restoration Hardware has simplified the supply chain to reduce complexity and shipping times and increase the level of in-stock merchandise ready to ship quickly. White-glove delivery is the default service option, with no surcharge. The company’s implicit message with these moves: *We know you’re going to buy online. We want you to. But come to the store and see the products in person beforehand.* Since the company began this strategy, its overall sales have more than doubled (from \$600 million to \$1.9 billion) and the percentage of revenue from online sales has grown from 25 percent to nearly 50 percent.

Curated Convenience in Apparel

Clothes are relatively light, and thus inexpensive to ship. In fact, our cost-to-serve analysis for a \$120 apparel order that consisted of four shirts or blouses showed that it incurred \$30 in cost-to-serve when sold through a

For large, expensive products such as TVs or furniture, customers value predictable convenience more than speed.

assemble. As part of our study, we analyzed the cost-to-serve for a \$399 flat-screen TV. For the standard retail model (in which the customer buys the TV in a physical store), the cost-to-serve was about \$22. As with grocery staples, store labor and overhead account for the bulk of the cost. However, the pure-play e-commerce model does not fare as well in comparison, because the cost of shipping a big TV adds around \$15 to the cost, for a total of \$39. (The potential for returns exacerbates the shipping cost differential for an online retailer.) Curbside pickup of online items was right in the middle, at \$31.

Part of our survey included a conjoint analysis, which uncovers

furniture a “great buy” and indicated they would consider the option up to a charge of \$108.

These findings suggest a fundamentally different response to the problem of “showrooming” — the phenomenon in which customers check out products in person at stores and then buy online (at whichever retailer offers the lowest price). Most retailers fear showrooming, and it has hurt chains such as Best Buy that sell branded products that are easily searchable by model number or key characteristics such as screen size. Customers like seeing the product firsthand before making a big purchase, but there’s little advantage to buying in a store given the inconvenience of having to get

traditional store — again, the costs were driven largely by labor. By contrast, a pure-play e-commerce retailer needed to spend only about \$12 for that same order to be shipped to a customer's home. However, apparel poses an additional challenge. It is unlike a can of soup in that customers worry about the fit, color, and overall aesthetics of

Meanwhile, some startups have recognized that time-starved customers don't necessarily want to sift through an endless product assortment, either online or offline, and are offering curation services in response. For example, Trunk Club (which was acquired by Nordstrom in late 2014) and Five Four Club, both clothing services for

players. Yet consumers have come to expect greater speed over the years. Back in 2000 there were no smartphones, and only 38 percent of the U.S. population even had a mobile phone. Now, there are more wireless subscriptions than people in the U.S. — and 75 percent of the population have smartphones (and the Internet constantly at their fingertips). Of course, not all of them are willing to pay for speed, but in some niche areas, such a focus can be effective.

Delivering directly to households within hours makes sense only in cities with population density.

apparel items, especially when they are expensive. Not surprisingly, apparel has a far higher return rate for goods purchased online than do other categories.

Rather than trying to fight the problem of returns, Zappos (which is owned by but operated independently from Amazon) has differentiated itself by offering free shipping and free returns on everything for 365 days after purchase. Zappos got its start selling shoes, but by 2009 clothing represented 7 percent of its sales. Today the company offers more than 1,000 brands in categories as disparate as eyewear and wedding ensembles and racks up \$2 billion in annual sales. Because returns are so straightforward, many customers buy multiple items in different colors and sizes. They keep the one they like and return the rest. Zappos can handle returns in such high volume because it allocates a significant portion of its fulfillment center to an extremely efficient returns operation and factors the cost of returns into its pricing. Its customers are willing to pay more for the convenience the company offers.

men, allow customers to provide their measurements and clothing preferences through a conversation with a stylist (Trunk Club) or an online tool (Five Four Club). Trunk Club doesn't charge for the curation service or for shipping, and allows the shopper to return any item free. Five Four Club requires a \$60 monthly membership fee and does not accept returns. Both claim quality comparable to that of a high-end department store: Trunk Club features designer brands, and Five Four Club has its own private label (allowing it to price at a 50 percent discount to similar retail).

It remains to be seen how mainstream curation will become. But in our survey, the average online shopper considered a \$9 fee for curation of a \$100 clothing order a bargain — and admitted that at \$16 the curation fee seemed marginally expensive, but he or she would still consider the option.

Speed: Still the Holy Grail?

The pursuit of speed without an understanding of cost led to the demise of many of the early last-mile

For example, delivering directly to households within hours instead of days makes economic sense only in cities with high individual incomes and population density. Even then, however, retailers need to scale back the variety of goods they offer. For example, Uber recently launched a delivery service experiment called Uber Essentials, which offers a few dozen items, such as candy, beverages, aspirin, and eye drops. Because the drivers carry the inventory with them all day, Uber can deliver to customers in as little as 10 minutes. A similar experiment in selected cities called Uber Eats delivers takeout meals from restaurants. The incremental sales of Uber Essentials supplement the driver's base business as a taxi replacement — and, of course, Uber takes a cut. The model costs almost nothing, in that the cars are already out on the road anyway, and they make deliveries between passenger rides.

Another startup, Instacart, applies the speed principle to grocery delivery and has made some slight improvements to the same-day service models used by Kozmo and UrbanFetch. Instacart uses smartphones and crowdsourced shoppers, who sign up to shop for customers of various grocery chains in ex-

change for a fee. The service costs a minimum of \$3.99, and goes up to more than \$10 for small orders during busy periods. And it's fast — deliveries come in just two hours. Crowdsourcing transfers the labor-utilization risk to the workers, and because these individuals pull goods off the shelves of existing grocery stores, Instacart is able to offer a reasonable variety.

But as our grocery cost analysis demonstrates, this model still

last mile would fall flat, we also offered a caveat: New models would likely emerge as companies attempted to find the optimal trade-offs to meet consumer needs. The solutions took much longer than the failures, but innovations by industry leaders are finally starting to show promise.

Given the various last-mile approaches at play, retailers — as well as CPG companies with direct-to-consumer e-commerce aspirations — need to be proactive. Consumer

nomics. The underlying drivers of success in retail, and particularly in the last mile — speed, variety, convenience, and cost — still depend on the physical supply chain, not merely the ephemeral zeros and ones employed in the world of digital engagement. The physical elements of those trade-offs move far more slowly than the technological shifts. The bottom line for companies? Get the structural elements of your last-mile approach right, build digitally engaging technology to capitalize on it, and train your customers to behave to your advantage. +

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Companies need to stop following customer behavior and start leading it.

faces the challenge of inefficient, store-based picking (ordinary shoppers pushing a cart around a retail store, filling individual orders, and waiting in checkout lines), along with the incremental travel distance to the customer's home. In March 2015, the *Wall Street Journal* quoted Fred Smith, the CEO of FedEx, saying, "I think there's just an urban mythology out there that the app somehow changes the basic cost input of the logistics business.... That's just incorrect." In other words, Instacart offers a unique trade-off among speed, variety, and convenience, but at a cost that most consumers cannot afford. Both Instacart and Uber Essentials represent niche offerings, which will remain limited to a narrow segment of high-income individuals in urban areas. They don't solve the fundamental challenges of the last mile.

Training Your Customers

Back in 2000, when we predicted that early attempts to conquer the

behaviors continue to evolve in response to new, dynamic offerings. Rather than reacting to those behaviors and trying to give people what they seem to want, companies should instead determine the right model for last-mile delivery of their goods, and create a value proposition that builds on their strengths. In other words, they should stop following customer behavior and start leading it, by "training" their customers in the behaviors that make economic sense using digital engagement that builds on their brands.

Admittedly, training consumers is easier for startups, because their customers have not yet built up any preconceived notions or ingrained behaviors. Some companies may be hesitant to try to shape the behaviors of their customers, thinking that technology changes so rapidly that any model that works today could be obsolete in three months. And although it is true that behaviors and technology evolve quickly, the same can't be said of fundamental eco-

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