



Unpacking the Amazon-Whole Foods Deal

Even if Jeff Bezos's gambit succeeds, there is still cause for concern.

Amazon's proposed \$13.7 billion acquisition of Whole Foods provides the most dramatic sign yet of digital disruption in the grocery world. Arriving ten years after the launch of the AmazonFresh grocery delivery service, which has never quite caught on, the deal raises at least two burning questions: What exactly is CEO Jeff Bezos up to? And why is it taking Amazon so long to become a major force in food retail?

Regarding the first question, one can only speculate. Bezos knows that integrating these two complicated and contrasting businesses will take time, perhaps one or two years. A leading innovator like Amazon would never commit to a plan that far in advance. Confusing matters further, Instacart, the San Francisco-based delivery service, is currently in the middle of a five-year exclusive partnership with Whole Foods. Bezos will have to choose whether to wait out the remainder of the five years, pay to break the deal, or cooperate with Instacart. All three options carry possible downsides.

The second question is easier to answer. Simply put, food delivery's razor-thin margins make it a tough nut to crack, even for a company as comfortable skimming the edge of profitability as Amazon. AmazonFresh, for example, depends upon a network of refrigerated warehouses fully stocked with products that, unlike other kinds of consumer goods, have a shelf life measured in days. And once

groceries have been purchased, they must be delivered quickly. No one wants their carton of milk sitting in the back of a sweltering truck all day. The grocery business may be lucrative—representing \$602 billion in U.S. sales for 2015 alone—but for an online enterprise, making perishables profitable presents considerable headaches.

Amazon may attempt to use Whole Foods' hundreds of existing locations as points of delivery, thereby eliminating the need for warehouses. It's unclear, though, how much reshaping of the chain's current distribution network would be necessary for that to work.

Payment model

In addition to distribution, there is the problem of setting delivery price points. Amazon is, of course, famous for offering free two-day delivery to its Prime subscribers. But with online grocery, *how* you pay, not just how much, really matters. Optimising payment structure is central to success in this sector, as I explain in the working paper "**Online Fresh Grocery Retail: A La Carte or Buffet?**" (co-authored by Elena Belavina of the Booth School of Business and **Ashish Kabra**, an INSEAD PhD candidate).

AmazonFresh has toyed with a yearly subscription fee entitling customers to free unlimited deliveries,

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as well as one-off, per-order fees. Using a stylised model, we compared the two payment structures and found there was no clear winner from a revenue perspective. Which is more profitable will depend on the given situation.

In either case, customers will try to maximise value for money. Annual subscribers will tend to order more frequent deliveries, because they have paid up front for an unlimited service. Those paying per delivery are incentivised to place big orders, in order to get the most out of their one-time fee.

For grocery, subscriptions generally result in smaller orders and a greater number of costly deliveries. This would seem on its face a less profitable structure. Yet we found that in dense, circular-shaped cities such as Paris and Beijing, where there is less driving distance between deliveries, economies of scale give the subscription model a revenue edge. In more spread-out environs (such as the rectangular island of Manhattan or the sprawl of Los Angeles), per-order fees work out better for retailers whose product mix is higher-margin and higher-consumption.

Further, since online groceries are increasingly competing with brick-and-mortar shops, subscriptions have a time-based advantage. When subscription fees increase, customers can compensate by ordering even more deliveries during the subscription period. By contrast, there are only so many perishables they could pack into a single order to economise when per-order fees increase. Therefore, per-order fee increases are more likely to make consumers choose their local supermarket over ordering online.

Delivering sustainability

Online grocery payments have ramifications for the environment as well. So far, the sustainability dialogue surrounding online grocery has largely been concerned with logistics, i.e. the carbon emissions produced by a fleet of food delivery vehicles. From this vantage, subscriptions would be more environmentally damaging, since subscribers' more frequent use of the service puts more vehicles on the road.

But carbon emission from vehicles isn't the most pressing concern, our research uncovered. Food waste is by far the more harmful element of the online grocery ecosystem. That's because decomposing food releases methane, a greenhouse gas 25 times more potent than carbon dioxide. Delivery fees are therefore the less sustainable option, because they encourage less frequent, larger grocery orders, presumably resulting in more wastage.

As our paper states, "The subscription model's emissions advantage over the per-order model amounts to between five and 15 percent of the food waste emissions created by an average citizen of the Western world." These findings hold up even for an all-vegetarian diet (which involves one-third the emissions of the typical U.S. estimate).

So if Amazon were to adopt per-delivery payments on a massive scale, the consequences could greatly contradict Whole Foods' "green" branding. Similarly, my co-author **Elena Belavina** recently found that cities could reduce food waste by fostering a denser concentration of grocery stores. The takeaway for policymakers and urban planners is somewhat counter-intuitive: When it comes to food, accessibility and sustainability are actually harmonious values. If executed properly, Amazon's absorption of Whole Foods could be a win for both Bezos and the environment.

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