



Teaching the Big Box New Tricks

What Toyota knows about supply chains—and how to apply it to almost anything, even mega-stores.

Manufacturing gurus James P. Womack and Daniel T. Jones have been studying the finer points of Toyota's business for more than two decades. Their 1990 bestseller on the topic, The Machine That Changed the World, has been translated into 12 languages. In their new book, Lean Solutions, excerpted here, Womack and Jones apply the Toyota system to service industries, including retailing, auto repair, and medical care. A key part of their "lean consumption" message is that customers' time is a central component of their total cost—and that a major opportunity awaits business executives who build on that insight. One of their surprising revelations is that the British supermarket chain Tesco, featured in the excerpt below, has applied Toyota's logistics methods so successfully that, the authors contend, it's leaving Wal-Mart's British subsidiary, ASDA, in the dust.

MOST COMPANIES APPROACH THE MARKETING OF PRODUCTS by breaking customers down into specific demographic attributes. With these data in hand, it ought to be possible to pre-



dict where customers will shop and in what format: price-conscious shoppers at Wal-Mart; time-pressed, higher-income customers at the stores near their homes or offices; or consumers on the web. The lean-consumption approach is very different. Rather than focusing on customer attributes, the lean provider looks at customer circumstances. Time is a constraint for most consumers today. This is where lean consumption can fundamentally change the equation—because the customer can actually obtain the same items cost-effectively through the entire range of store formats without being forced to make these trade-offs between time and price.

Tesco in Britain has been a pioneer in lean provision for more than a decade. In the mid-1990s, as he looked at the opportunities for retailers provided by the emergence of lean logistics, Graham Booth, Tesco's supply-chain director (now retired) had a very simple insight: A rapid replenishment system triggered by the customer would work in any retail format. What's more, it would work even better if the same replenishment system, using



the same suppliers, cross-dock distribution centers, and vehicles serving many stores, could supply every retail store format.

Indeed, Booth saw that there might be very little difference in real costs in supplying the same item through any store format. This was because the purchase price from the supplier could be negotiated for the whole network, not by format, and the same replenishment system making frequent milk runs to larger stores could also stop at small stores to share logistics costs. The cost disadvantage of smaller outlets, due to weak supplier leverage and expensive logistics, would largely disappear.

Booth approached Dan Jones and his research group at the Cardiff Business School in Wales, asking how Tesco could benefit from Toyota's supplier logistics methods to reduce time and effort. Dan suggested "taking a walk"—examining a typical provision stream, in this case the one for cola. He urged Graham to invite the other functional directors at Tesco—retail, purchasing, distribution, and finance—along with the operations and sup-

ply-chain directors of Britvic, the company supplying the cola. On a cold day in January 1997 this group set out, walking back through the provision stream for cola from the checkout counter of the grocery store through Tesco's regional distribution center (RDC), Britvic's RDC, the warehouse at the Britvic bottling plant, the filling lines for cola destined for Tesco, and the warehouse of Britvic's can supplier. Along the way, Dan and his team from Cardiff kept asking simple questions: "Why are products missing from the shelves? Why does a sales associate need to re-sort products from roll cages that have just come off the truck from the RDC? Why is so much stock needed in the back of the grocery store, at the Tesco RDC, and at Britvic's RDC? Why are there huge warehouses of cans waiting to be filled near the bottling plants?"

Excerpted from Lean Solutions: How Companies and Customers Can Create Value and Wealth Together, by James P. Womack and Daniel T. Jones. Copyright 2005 by Solution Economy, published in October 2005 by Free Press, a division of Simon & Schuster.

And so on. The walk was an eye-opener. When Tesco and Britvic analyzed the map they drew of the process as they walked, they could see waste at every step, along with huge opportunities for saving costs while increasing the satisfaction of the end customer. As Booth looked at the situation, he realized that practically all of Tesco's practices for getting goods from the supplier to the shelf would need to change.

The first step was to hook the point-of-sale data in the store directly to a shipping decision in Tesco's RDC. This made the end customer at the checkout point the "pace-maker" regulating the provision stream. Tesco then increased the frequency of deliveries to the retail stores. After several years of experimentation, Tesco's trucks now leave the RDCs for each store every few hours around the clock, carrying an amount of cola proportional to what was sold in the last few hours. At the RDC, cola is now received directly from the supplier's bottling plant in wheeled dollies. They are rolled directly from the supplier into the delivery truck to the stores. And once at the stores, the dollies are rolled directly to the point of sale, where they take the place of the usual sales racks. This innovation eliminates several "touches," in which employees moved cola from large pallets to roll cages, to the stores, and then onto dollies to reach the shelves, where they were handled one last time. (In drawing their provision-stream maps of the original process, Tesco discovered that half its costs in operating this provision stream was the labor required to fill the shelves in the store.)

For fast-moving products like cola, the Tesco RDC is now a cross-dock rather than a warehouse, with goods from suppliers spending only a few hours between their receipt and their dispatch to the stores. To guard against sudden spikes in demand, a buffer stock of full dollies is still held aside. But because of the frequency of replenishment, the buffer is very small. Back at the cola supplier, even larger changes have taken place. Britvic improved the flexibility of its filling lines so it can now make what the customer has just requested in small batches with very high reliability. This means that there are practically no finished goods awaiting shipment in Britvic's filling plant. The final logistics step is for Tesco's delivery truck to take the dollies several times a day from the RDC on a "milk run" to a series of Tesco stores. At each store it collects the empty dollies and then visits several suppliers to return them. At each stop it also picks up full dollies and then returns to the Tesco RDC to restart the cycle. That may sound like a good way to increase truck miles and

logistics costs, and many traditional managers, including those at Tesco and Britvic, have assumed it must. However, in practice, these methods substantially reduce the total miles driven along with freight costs, while also reducing total inventories in the system.

The consequence, in terms of performance, is remarkable. Total "touches" on the product (each of which involves costly human effort) have been reduced from 150 to 50. The total throughput time, from the filling line at the supplier to the customer leaving the store with the cola, has declined from 20 days to five days. The number of inventory stocking points has been reduced from five to two (the small buffer in the RDC and the roller racks in the store), and the supplier's distribution center for the items has disappeared.

As he grasped the logic of lean logistics, Booth realized that his simple insight was valid: A rapid-replenishment system triggered by the customer would work in any retail format. What was more, it would work even better if the same replenishment system, using the same suppliers, cross-dock distribution centers, and vehicles serving many stores could supply every retail format. Using those insights, Tesco set out to create a range of formats, beginning in Britain, so that households could obtain fast-moving consumer goods from a complete variety of outlets. This has led to tiny Tesco Express convenience stores at gas stations and in busy urban intersections; Tesco Metro stores (at the small end of the "supermarket" range) on busy streets and in high-density urban areas; traditional Tesco supermarkets in urban and suburban areas; Tesco Extra on the suburban perimeter as an answer to "big boxes" operated in Britain by Wal-Mart's ASDA subsidiary; and Tesco.com for the web shopper.

The strategy has worked quite brilliantly, permitting Tesco to establish the lowest-cost position among British retailers (including Wal-Mart) while posting progressively higher margins and steadily increasing its share in every format. But this is just the beginning in tapping the potential of lean consumption. By offering households a range of formats for every circumstance and pioneering the use of loyalty cards, which give discounts to frequent shoppers, Tesco (and any other provider that follows this path) is in a position to know everything a household buys during the course of a year at all formats and where and when they buy it. In fact, 80% of items currently bought in Tesco stores are bought by loyalty-card holders. These loyal customers obtain close to 100% of their needs at the range of Tesco outlets.



BRENT STIRTON—GETTY IMAGES

LEAN AND MEAN: Tesco brings big-box pricing to stores of all sizes.

Tesco's strategy has worked brilliantly. It has Britain's lowest costs. Yes, lower than Wal-Mart's.

The use of a range of formats, plus detailed knowledge about specific consumers, will progressively permit Tesco and other providers adopting these methods to offer each household convenient variety at lower total cost. One way is by tailoring the SKUs (stock-keeping units) offered in each smaller store to what nearby customers actually want. In this context, think of the Wal-Mart Superstore as the default option: The store carries virtually everything, so every shopper can find what he or she wants, assuming it is not out of stock. But its size means it needs a vast catchment area to operate efficiently, and each geographic region can support only one store. As a result, the average

customer must access the store from far away. While most new entrants in the web-based home-shopping industry—like Webvan in the U.S.—were spending billions trying to construct highly automated, dedicated fulfillment systems from scratch using massive warehouses, Tesco was learning how its employees could shop for Tesco.com customers in the aisles of the nearest Tesco store and make money for Tesco in the process. By eliminating the need for any new bricks and mortar and by using existing store personnel to pick web orders at times when store traffic is low, the costs of the service have been dramatically reduced. ■

Lost in the Sea of Brilliant Products

Q&A: Why simplifying consumption will be the next big thing.

FORTUNE's Stuart F. Brown recently talked to Womack at the Lean Enterprise Institute in Brookline, Mass., and by speakerphone with Jones at the Lean Enterprise Academy in Britain. Their conversation ranged from auto manufacturing to tackling the inefficiencies that plague the service sector.

You two have been on quite an intellectual voyage. Can you describe it?

Womack: Our first effort, *The Machine That Changed the World*, is the story of the Toyota business system—not the car company, but the company's business system. In *Lean Solutions* the leap is to go out to the end customer—you and me—and work backwards. And we have a very simple idea, which is that consumption is a process, just like production, except that we are operating the consumption process ourselves. We do a tremendous amount of work ourselves, which we pay for with our own time and which nobody wants to compensate us for. We live in a sea of brilliant products, but many of us are drowning. All too often the acquisition process is time-consuming and difficult, the installation process to get it to work with all the other stuff in your life is difficult, and the maintenance process is difficult too. And we say, Isn't this the next leap for smart people in business? The next great differentiator? To solve the time-constrained customer's problem, instead of just dealing with isolated objects.

Getting a car serviced can be particularly annoying.

Jones: When you take a car to get it fixed, there's a 60% chance that they can't get it done right at the time they promised. Often they can't get the parts quickly enough, and you either have to bring the car back or they have to keep it overnight. Or they didn't actually fix it properly, and you have

to take it back again. That's screwed up, but it's very typical of many service-delivery processes.

We helped a car dealer in Portugal, Pedro Simao, who actually respects your time and gets the job done right the first time. First he has a proper conversation with the customer by phone to make sure he absolutely understands what the problem is. This is about interviewing by a skilled technician, who in most cases can diagnose the problem and preorder the parts. The parts are delivered to a single stocking point for the dealer's 17 repair-shop locations; there are no parts at all stored at the actual dealers. And that central parts location can get needed parts to any of the repair shops within an hour. So when the service technician puts the car on the lift, he already has a good idea what the problem is, and he has the kit of parts to fix it. He's able to do the job right the first time.

Why don't more businesses get it right?

Womack: Recently we have been hearing people say that they want to be the Toyota of health care, of re-

tail, of repair service, of airlines. Okay, fine, let's take a walk. We always start at the primary level—what Toyota calls the level of the work—where the value-creating work is done. And you look at the process as it currently exists. And you ask, Why? Why? Why? Why? Typical answers are: "That's the way we've always done it," or "We've already bought all these assets, so we have to use them."

Fixing a factory is one thing, but fixing a whole system, where you've got six or eight or ten factories or warehouses and four or five different companies trying to work together, is another thing. Thinking about "How do we optimize the whole—rather than just our little piece?" is a big leap.



JONES AND WOMACK: "Let's take a walk," they say. "We always start at the primary level."