



When shoppers
demand a seamless
experience, what
can digital shelves
deliver?

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Today's shoppers demand more. They seek a seamless, digital experience.

There's growing excitement about the potential to combine a new generation of digital label and shelving technologies with the in-hand functionality of the consumer's smartphone. Is this the game-changing idea the consumer products industry has been looking for? Retailers must run analytics-informed pilots before they commit to this way of bringing "the internet of things" into their stores, believes Thomas Bornemann, Principal, Americas Consumer Products & Retail, Southeast, EY.

Online sales are continuing to grow around the world, but the fact remains that brick-and-mortar stores are still the venue where the vast majority of shopping takes place. And this is likely to remain the case for years to come.

Our research suggests that offline sales will generate 81% of consumer products companies' revenue in five years' time. That's a fall from the 93% we see today, but it underlines the continuing significance of offline shopping.

However, the resilience of the traditional store should not be an excuse for retailer complacency. If retailers fail to leverage their real estate and bring the online experience into their stores, they will lose customers and their stores will become increasingly irrelevant.

On the upside, if retailers can integrate the store into the omni-channel world in a way that delights consumers, then retailers – and manufacturers – could reignite their commercial performance. The question is, how can they achieve this goal? Adopting the right technologies is a key part of the answer.



Digital shelves: why now?

The latest generation of digital shelf technologies might provide an answer. Retailers in some markets have been using electronic shelf labeling (ESL) for years. In France, for example, consumer products companies face tough regulatory fines if they display incorrect prices.¹ The risk of a penalty has helped to make the business case for ESL investment. Elsewhere, take-up has been virtually nonexistent.

But the newer generations of digital shelf technology transform what's possible. They offer the ability to connect better electronic labeling² with the functionality of the shopper's own smartphone,³ and then to integrate both with the retailer's computer systems.

Consumer products companies are experimenting now with different ways of deploying this idea. Early pilots suggest it's a combination that could help to bridge the gap between the online and in-store experience. It could also help retailers to compete with non-store fulfillment models, like Peapod and Amazon, which continue to grow and extend their reach into new markets and categories.⁴

Early pilots point to value

We've seen compelling examples of firms offering in-store consumers the kind of enhanced, personalized and immediate trade promotions they have become used to enjoying online. Retailers gather valuable data about at-the-shelf consumer behavior and use advanced analytics to turn it into insights they couldn't get otherwise.⁵

Consumer products companies are using technology to test ways of personalizing discount coupons, enhancing self-scanning and giving greater access to useful information product details, reviews and alternative options. Industry-wide there are increasing opportunities to explore bundling, co-branding and shopper loyalty programs in ways that could increase customer spending and grow sales.

The ability to change prices dynamically and to monitor consumer response in real time could enable much more sophisticated approaches to price testing and promotions, when combined with advanced analytics. A retailer could use live data about how its customers are behaving in front of the shelf, and as it takes a product off the shelf to identify and fine-tune the sales tactics that are most effective for a specific product in a specific store.

With the new way of talking to consumers, they don't have to delay advertising until a product has been out. Because they communicate directly with the consumer via the technologies, they don't have to wait for the consumer to see it in a store before they begin advertising to them. Digital shelving could also give both retailers and manufacturers greater visibility across their supply chains. By combining that increased knowledge with sophisticated analytics, they could optimize prices in the store.

A major retail client's pilot's using store-level apps to close the data loop have seen sales increase three-fold across 1,000 stores. (See box: *Digital shelving: some benefits*)

Digital shelving could enable retailers to adopt the lessons learned in other industries. Airline and theater customers are used to the idea that seats become more expensive as their availability falls. Perishable food could automatically become less expensive as its use-by date approaches.⁶ The data gathered via digital shelves creates more sophisticated opportunities for retailers to maximize in-store inventory utilization. (Amazon already changes prices on some products up to 20 times a day.)

Digital shelving: some benefits

- ▶ Cut labor costs for in-store customer service by providing enhanced guidance to staff
- ▶ Improve store productivity and simplify processes, enabling people to trace goods through the store, leading to more effective resource management
- ▶ Enable retailers to update prices, offer intraday promotions and gather data instantaneously and automatically, without error and the need for manual intervention
- ▶ Ensure prices at the shelf edge are perfectly synchronized with those scanned at checkout, avoiding confusion with consumers
- ▶ Enable retailers to make real-time, personalized offers to customers in-store
- ▶ Capture valuable data about customer behavior at the shelf
- ▶ Create new opportunities for bundling, co-branding, and shopper loyalty programs
- ▶ Give shoppers access to in-store product details, reviews and alternative buying options



Always in stock

Some of the pilot results indicate investment in digital shelving could even solve the out-of-stock (OOS) problem that has plagued the industry for decades. A claim like that must be handled with caution, naturally. Yet trials show the latest digital shelf technologies, integrated with shopper smartphones and supported by advanced analytics, can cut OOS levels at a major retail store by 5%. IGD analysis puts current average industry-wide OOS rates at 4.5%. The figure is 8% in the US. So we could be talking about potentially resolving the OOS problem entirely.

Great data from trials doesn't mean the industry has found a one-pill cure for one of its biggest and most enduring headache. But companies are moving fast to scale-up promising pilots, while others are desperate to get their first trials off the ground.

Bringing the internet of things right into the heart of the retail store, which is effectively what we are talking about, could prove revolutionary. For some executives, the prospect of eliminating OOS would make the business case for digital shelf investment on its own, almost regardless of the implementation cost.

The kind of intelligent, real-time pricing that digital shelving enables could solve a host of problems for the 60% of firms that, according to our research, feel they are failing to implement an effective omni-channel strategy. For example, 74% of firms globally think mistakes in price elasticity or promotions drive significant cost and complexity in their business. And 40% have no mechanism to fulfill stock-outs across sales channels until that channel is back in stock.

US\$50m

Over a 10-year period, a store with annual sales of **\$50m** could benefit from incremental sales of over \$15m.

US\$1m

Over a 10-year period, a manufacturer making sales today of \$2m to an average store could benefit by nearly **\$1m** of additional sales.

70%

Over **70%** of consumers use a mobile device on their path to purchase.

81%

Our research suggests that offline sales will generate **81%** of consumer products companies' revenue in five years' time.

12%

Food waste costs retailers **12%**, and they pass this cost onto consumers.

Working together

There's another important point to make about the benefits of investing in this area: stakeholders across the industry can come out as winners – both retailers and manufacturers alike. For example, there's scope to adjust prices dynamically, monitor stock accurately at the shelf, ensure planogram compliance and show the omni-channel consumers that the product they want is in stock before they go to the store.

And look at the OOS problem: if 4% of the time the customer leaves the store, the retailer is losing 4% of sales. But if the shopper buys a competitor brand instead, that's an 8% loss to the manufacturer. Clearly, it's in their mutual interest to fix this.

The possibility for all stakeholders to gain from the investment means there's scope for people to collaborate on trials and work together, which we're seeing happen already. The implication is that if digital shelving

technologies continue to prove themselves, their large-scale adoption won't be like the painfully slow grind to implement barcodes, where manufacturers and retailers argued for 15 years about who was going to pick up the initial cost because both thought the other would benefit more. The in-store internet of things is something that could gain unstoppable momentum very quickly.

And consider this: the true measure of what's in stock and what isn't is what the consumer actually sees on the shelf, not what the inventory system says is somewhere in the store. Given that inventory systems currently have an accuracy rate of just 52%, there could be even more money on the table. This technology could be the Holy Grail that inspires cultural change across the industry.

Time for a reality check

But there are a lot of hurdles to overcome before that happens. We've seen promising trials, and major consumer products companies getting very excited about the results, right up to CEO level. But the enthusiasm for these technologies must be tempered by a healthy dose of realism.

Some questions to consider include:

- ▶ Do we play in one category or across the store?
- ▶ Is digital shelving appealing across every kind of product?
- ▶ Do we risk making the in-store experience worse?
- ▶ Will consumers push back on dynamic pricing, because it can sometimes make them feel overcharged?
- ▶ Will shoppers forego privacy concerns if they can see a tangible benefit?
- ▶ We've seen some collaboration between retailers and manufacturers in trial implementations, but will that desire to cooperate scale?
- ▶ Will models emerge that allow all the technology risks and costs to be borne by the consumers bringing their own technologies, so that stores don't have to invest large sums?
- ▶ Will the savings actually be passed to the consumer, or will contribution margins simply increase?
- ▶ Who owns the data collected by the digital shelving? Right now retailers have it. Can they commercialize it?
- ▶ Manufacturers are being asked to foot part of the implementation bill, but will they benefit from the data retailers collect?

Some of these are practical questions that firms can test in their pilots. Others need strategic thought. Our analysis of the business case suggests the numbers look favorable in terms of cost and return (see box: *Business case*). But each company needs to form its own hypothesis, and design and execute an appropriate way to test it.

Business case – How the numbers could add up

How might the adoption of smart shelves, ESL technologies and enhanced consumer experiences affect the retail and consumer goods industry? We've developed a proprietary business case to inform that conversation.

We've taken the perspective of one average US grocery store, with 46,000 square feet of space and about 100,000 shelf labels, and sought to quantify the benefits and costs for both retailers and manufacturers.

We've based all our assumptions on public industry data, when available, and our own conservative estimates. Naturally, this is a work in progress – we are continuing to refine the business case, and stress that it would need to be tested through each retailer and manufacturer's pilot projects. But we believe our model provides an invaluable starting point.

The case for retailers

Over a 10-year period, a store with annual sales of \$50m could benefit from incremental sales of over \$15m, the model suggests. This assumes the retailer carries all the first-year storewide implementation costs, which we very conservatively put at \$3m per store,⁷ and \$100,000 of incremental, ongoing operational costs. Any of these benefits would increase greatly if manufacturers contributed to the implementation costs.

The case for manufacturers

Over a 10-year period, a manufacturer making sales today of \$2m to an average store could benefit by nearly \$1m of additional sales, the model suggests. We have included \$39,000 in estimated implementation costs per manufacturer per store. To ensure our estimates are conservative, we have included this cost for the manufacturer, but not offset the retailer's implementation costs.



Analytics are essential

More widely, there's another reason why firms need to take a reality check before the excitement around digital shelving gets the better of them: analytics.

There are two points to make here. First, analytics needs to be an integral part of any proper pilot. If a retailer can't capture, analyze and interpret the data from its test efforts, then its risks learning nothing of value or, worse still, going off down the wrong track, based on false evidence.

Second, a digital shelf label, for example, is only as good as the data you display on it. This might sound like an obvious point. But for investment here to be effective, retailers need to ensure the prices, promotions and whatever else they display on their shelves are informed by reliable, real-time commercial analytics. They also need to be confident that the data they collect about what's happening at the shelf – such as how stock is moving and how shoppers are behaving – is gathered into a system of analytics and is actually used to make the decisions that matter.



The way forward

Our experience is that consumer products companies in this industry – like those elsewhere – can struggle to invest in commercial analytics and data in ways that give them an advantage over the competition. Typically, that's because they direct their analysis at the wrong issues, they use what they discover in ways that lack sophistication, and they fail to play across channels. But these are all problems that can be overcome.

Retailers that use digital shelving technologies effectively – which includes underpinning them with advanced commercial analytics – would be better served by executing omni-channel strategies, and to offer consumers a seamless online and in-store experience. That in turn would help them to make their stores more relevant and engaging in an omni-channel context, and to fend off online-only competitors. They would also be in a stronger position to make their sales and marketing efforts far more effective.

The potential to fix the OOS problem, revitalize stores and offer a compelling omni-channel experience is clearly emerging. We've seen heightened levels of interest among some battle-scarred industry professionals, and that doesn't happen without good reason.

But rightly, these people treat cure-all technologies with a healthy dose of caution. We think the only way to separate the buzz around digital shelving from the business case is to get the analytics right – and that needs to happen from the pilot stage onwards.



Author

Thomas E. Bornemann

Principal, Americas Consumer
Products & Retail, Southeast, EY

Cell: +1 336 255 5037

Email: thomas.bornemann@ey.com

Endnotes

- ¹ Retailers have been fined in several US states, too. On average, prices are wrong around 6% of the time. Ultimately, it's the consumer that pays the cost of such fines, and the cost of price audits aimed at identifying mispricing.
- ² The new generation of digital shelves are more energy-efficient. Just 1,100 watts of energy can power enough for a whole store. Some have solar panels that generate power from light in the store. While some digital labels operate via batteries, we are deliberately only valuing digital labels and shelving that operate electrically due to the environmental effects of batteries.
- ³ Over 70% of consumers use a mobile device on their path to purchase.
- ⁴ A digital shelving system can give a shopper the option to order a product and have it delivered to their home if it's not on the shelf. Even if there is stock available, the shopper might like to order multiple units of a product that is heavy or bulky, such as multi-packs of bottled water or diapers. Manufacturers willing to pay the delivery cost would strengthen customer ties and avoid losing business to rivals.
- ⁵ Digital shelving reports product information at a SKU level, providing constant two-way communication.
- ⁶ Food waste costs retailers 12%, and they pass this cost onto consumers. With digital shelving, the product is recognized by SKU, and prices can decline as the expiration date nears.
- ⁷ Per data from one provider of these technologies, installation would take two days, and the work could be done at night, without an impact on sales. The cost is US\$250,000 for a 50,000-square-foot store. Retailers can own or lease the technology.

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